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NATIONAL PETROLEUM NEWS

Refining Technology EDITION

In this Issue...

● Holliday Criticizes Proration

Remarks of W. F. Holliday, president of Standard of Ohio, attacking state proration as "squeezing" the non-integrated refiner were the highlight of 35th semi-annual meeting April 13-14 of National Petroleum Assn. at Cleveland 9

● Oiliness and Viscosity

Relationship of oiliness to viscosity has been a confounding question among lubrication technologists for two generations. These authors present a carefully developed study of these two phenomena in an effort to differentiate between these properties and to explain the meaning and application of the two forces in lubrication. R-179

● Continuous Refining with Propane

Treating Pennsylvania and Mid-Continent lube stocks continuously with propane reduces costs, installation expense, and yields superior products, these authors say R-186

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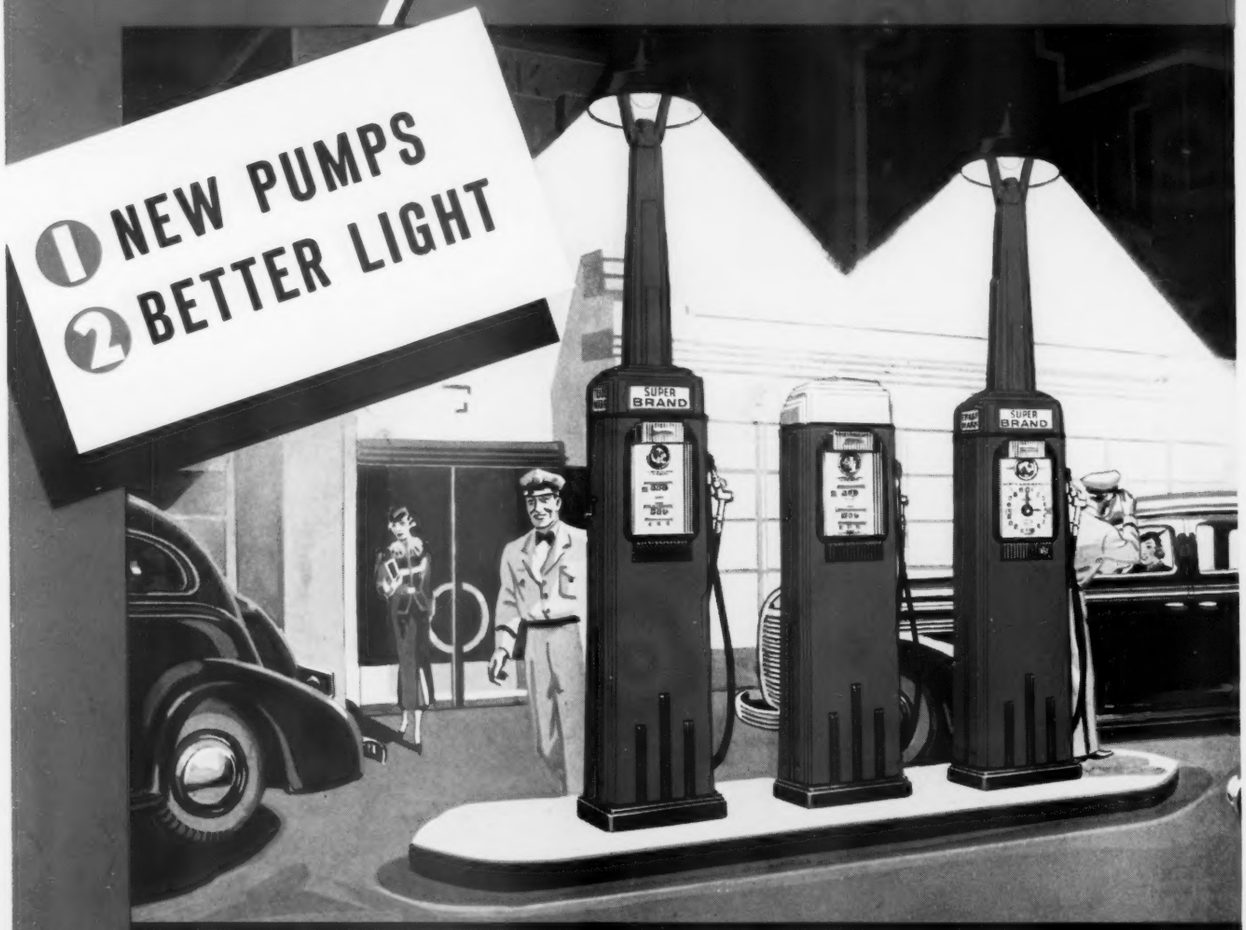
APRIL 20, 1938

Two Ways TO INCREASE BUSINESS



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- "THAT is Sturdy and Long Lived—
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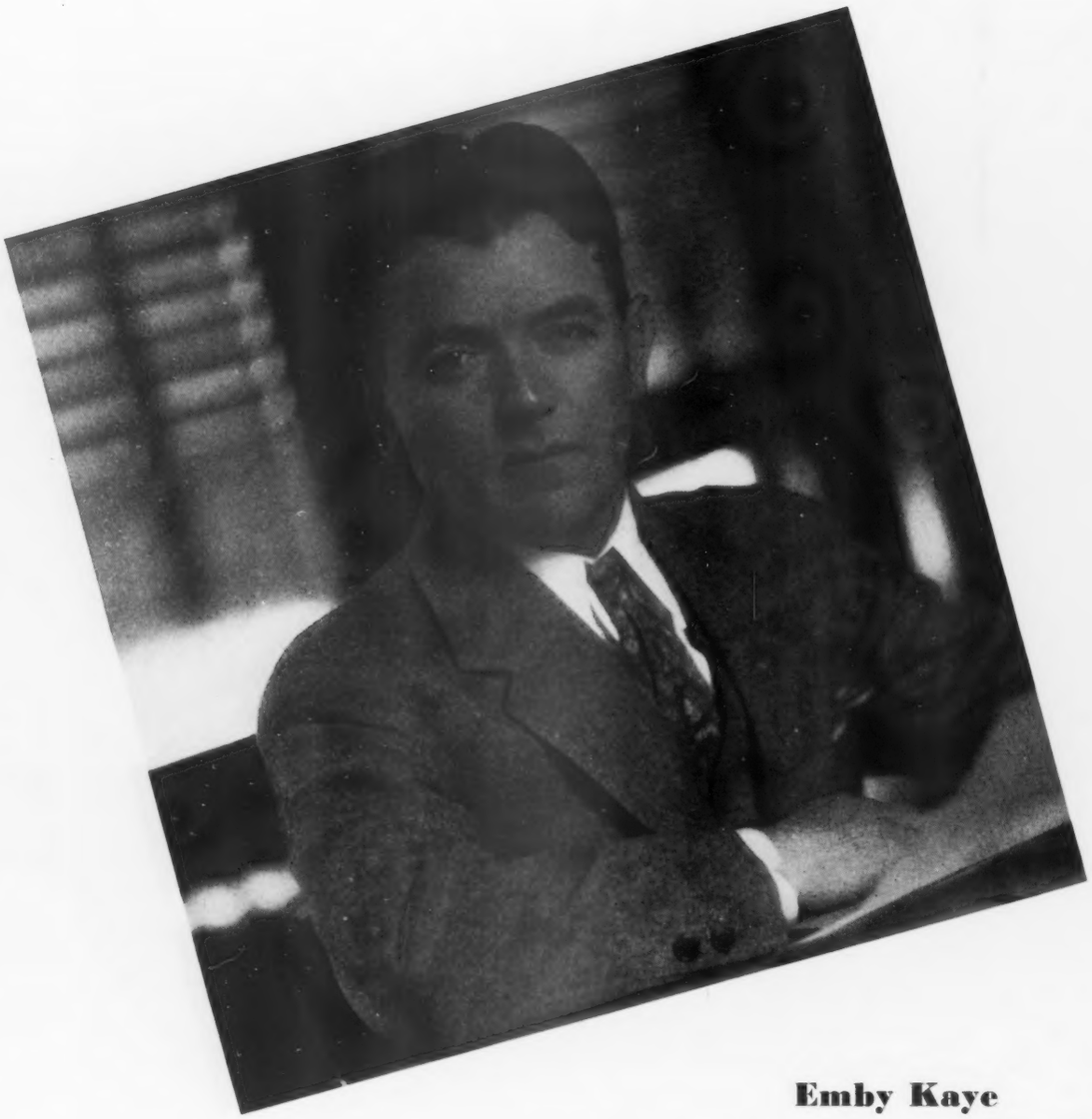

Emby Kaye

Emby Kaye, now of Wasatch Oil Refining Co. with headquarters at Salt Lake City and formerly vice president of manufacturing for Skelly Oil Co., Tulsa, has been active in refining and natural gasoline circles in the Mid-Continent for many years. When head of Skelly's natural gasoline department he was one of the leaders in developing the work of the Natural Gasoline Association of America, of which he was president for several terms, and in building the liquefied gas industry in the southwest.

Made vice president of Skelly's refining department several years ago, he has been equally active in the development of the work of the Manufacturing Committee of the Western Petroleum Refiners Association, of which committee he is now chairman.

News By Teletype From 4 News Bureaus

National Petroleum News

News From Oil Industry Everywhere

VOLUME 30 WEDNESDAY, APRIL 20, 1938 NUMBER 16

Divorcement Bill To Be Opposed By Ohio Jobbers

BULLETIN

By Telegraph

COLUMBUS, O., April 19.—Board of directors of Ohio Petroleum Marketers Assn. in a special meeting today voted to oppose the Gillette-Biermann Bill and authorized E. V. Weber, president, to present a statement for O.P.M.A. at hearings in Washington.

* * *

By Teletype
N. P. N. News Bureau

WASHINGTON, April 19.—At least six witnesses are expected to take the stand in opposition to the Gillette-Biermann marketing divorcement bill when hearings are resumed April 20 before a subcommittee of Senate Judiciary Committee.

They are Eric V. Weber, president of Ohio Petroleum Marketers Assn.; Paul Blazer, Ashland (Ky.) Refining Co.; Hubert B. Fuller, Cleveland, O., attorney, and a representative of the Hanlon-Buchanan Co., Tulsa, Edwin H. Duff, representing American Steamship Assn., and Hugh F. Hall, Washington attorney who appeared previously in support of the bill but now is said to have asked for time to testify against it.

Hall first appeared for the Indiana Farm Bureau Federation. Committee clerks said he did not reveal who he was representing this time.

Members of the natural gasoline industry contend that the divorce bill, by forbidding anything but the first sale, would prevent natural gasoline manufacturers from buying material from other manufacturers to fulfill commitments.

Hadlick today declined to comment on reports from Tulsa that he had agreed not to oppose an amendment to the Gillette-Biermann Bill which would exempt natural gasoline manufacturers from its provisions.

Eight witnesses favoring the bill, most of them representatives of independent jobber groups, already have appeared at earlier hearings, but Paul E. Hadlick, secretary of National Oil Marketers' Assn., one of the bill's principal backers, has indicated that other jobber repre-

(*Continued on page* 24)

Holliday Attacks State Oil Proration

Ohio Standard Chief Says Refiners Are "Squeezed"

N. P. N. News Bureau

CLEVELAND, April 18. — President W. T. Holliday of the Standard Oil Co. (Ohio) criticized state proration as now administered as responsible for a "squeeze" of the non-integrated refiner between $1.25 crude and lowering prices of refined products last week before 200 oil men attending the 35th semi-annual meeting here of the National Petroleum Assn.

Like Holliday's company, most members of the N.P.A. are non-integrated refiners, without crude supply of their own.

"There seems to be a misconception of the situation of the refining division of the industry," Holliday told the refiners, "for we hear the charge frequently made that refinery marketers are subsidizing their marketing department out of refining profits, when the figures clearly show that for some little time recently there have been no refinery profits, and that the refining division of the industry for a good many years has been the least profitable in the industry and has gone through long periods of losses. It has constantly been subjected to the hazards of the squeeze between rigid crude oil prices and pipeline tariffs on the one hand, and fluctuating product prices in the sensitive wholesale tank car markets on the other."

Quoting a statistician as saying that for every service station in this country there are at least two crude oil wells, Holliday said, "in spite of this basic over-production and the resultant reduction in prices of finished products, there has been no reduction in the share of the industry's gross revenue enjoyed by the production and pipeline divisions. . . ."

This was similar to President Holliday's statement in his

New Chemicals Found in Oil, A.C.S. Hears

By Telegraph

DALLAS, April 18.—The petroleum chemist will be called on for far greater contributions to the technology of petroleum refining in the immediate future than he has made up to the present, Dr. P. K. Frolich, research director for Standard Oil Development Co., told 800 chemists at the spring meeting of the American Chemical Society here today. The manufacture of hundreds of types of chemicals from petroleum as a new source is an accomplished fact in the laboratory, he said, and the utilization of petroleum as a general source of many new chemicals, and chemicals now derived from other sources, waits on the perfecting of processes or reduction of manufacturing costs.

Sixty million pounds of tetraethyl lead were used by the refining industry in 1937 to improve the anti-knock rating of motor fuels, Frolich said.

Without passing along the added cost as additional price to the consumer, the chemist will carry the primary burden of producing these improved products, Frolich pointed out.

A hitherto untapped reservoir of chemical compounds and raw materials for chemical synthesis is being explored by the worlds chemists, 1000 members of the American Chemical Society assembled here were told today.

A whole family of nitrogen

(*Continued on page* 22)

Texas Railroad Commission Urges Cut in Refinery Runs

By Telegraph

AUSTIN, Tex., April 19.—Voluntary restriction of refinery was urged April 18, at the monthly state-wide hearing of the Texas Railroad Commission by Chairman Terrell and Commissioner Ernest O. Thompson.

Col. Thompson said that the commission had no authority to restrict refining operations but that if a reduction of 15 per cent were to be made, which approximately corresponding with the reduction in crude oil output through the Sunday shutdown, it would aid greatly in bringing about balance between supply and demand by June 1.

It was considered certain that the Sunday shutdown method would be continued through May. Bureau of Mines forecast of demand for Texas oil for May was 1,322,500 barrels daily, 7,300 barrels less than the April forecast.

Basic allowable production for the entire state stood at 1,546,183 barrels on April 18, a gain of about 35,000 barrels since April 1, due to completion of 397 wells. Allowable after giving effect to the Sunday shutdown stood at 1,323,748 barrels on April 18 and actual production is near that figure. The Sunday shutdown does not achieve quite one-seventh reduction chiefly because the Texas portion of the Rodessa field is exempted to preserve parity with the Louisiana and Arkansas parts of the field.

A few minor requests for increase in allowables were heard. Chief of these was from Sulphur Bluff operators who said they had additional demand for their heavy asphalt oil from refiners who have been using Mexican crude. Increase of 2300 barrels daily was asked.

Humble Oil & Refining Co., suggested readjustment of some high allowables in West Texas. The company as a purchaser is taking 12,000 barrels more daily from this district than it now requires, a company official said.

annual report to stockholders, issued three weeks ago, when he remarked:

"It would seem inevitable that such underlying conditions (overproduction of crude) would be reflected in price. Under a free economy, prices, both of finished products and raw material, inevitably would reflect such basic conditions. Thus far, however, crude oil prices in the Southwest have not been lowered, a circumstance which, in the face of the overproduction situation, can only be attributed to the rigid political nature of crude oil prices in the leading oil states in the southwest under the mechanism of proration now in vogue."

I.P.A.A. Objects

To this, the Independent Petroleum Assn. of America had retorted:

"There is no justice in the suggestion that the producer should pay for the cost of bad marketing practices or be penalized for the folly of other branches of the industry over which he has no control whatever. The refiner - marketer fixes the price of gasoline. If he is selling below cost he can stop that at any time. There is no logic in the proposal that the price of crude petroleum should be wholly governed by the price of gasoline."

Holliday, before the N. P. A., asserted that the distribution of the industry's gross revenue must be accomplished by a free interplay of economic forces, or each branch of the industry adversely affected would fly to the government for profit protection, with resulting governmental control to the detriment of the entire industry.

"Economic forces move as a result of the basic conditions of the industry as a whole; but when any particular group in the industry feels too keenly the uncomfortable effect of that economic pressure it is natural for them to become angry and blame their difficulties upon other *people* instead of upon economic forces. When a person is suffering he is not in any condition for the exercise of logic, and if a man is suffering he is apt to be reckless in reaching out for a means of relief," Holliday said.

"The essential cause of our troubles is the supply factor, an excessive production of crude oil and new wells, an excessive refining capacity and refining production, and an excessive supply of marketing outlets.

Crude Prices Rigid

"Proration, as administered, has resulted in a rigidity of crude oil price which so far has protected the production division from the immediate consequences of over-supply; published tariffs protect the pipelines; and the rigidity of margins has largely protected the independent marketing branch of the industry, so that the refining division, squeezed between the upper and lower millstone, has borne almost the entire effect of unfavorable economic forces ever since the present method of proration became effective.

"It should not be expected that the oil industry should be exempt from the vicissitudes of price changes to which all other industries are subject. Even with the most perfect balance of supply and demand the prices of the oil industry's products are bound to go up and down in response to purchasing power, the value of the dollar, costs, capital requirements and all the general conditions which affect prices generally. (As a matter of fact, the gross realization for the products of crude oil has not declined in recent months as much as the average price decline of commodities generally.)

"The question remains, however, as to how the effect of these inevitable price changes shall be borne by the various divisions of the industry. * * *

"We need to be especially concerned about this problem if there is any unnatural or artificial fixing of the sharing of the industry's gross income by its divisions through rigidities emanating from government supervision or assistance. If we can not solve this problem of equitable sharing by ourselves, the government will attempt to solve it for us, to the detriment of us all, by coming to the assistance of any divisions of the industry adversely affected by government helping in some other division.

"For this reason any division of the industry which is satisfied with its present share of the gross revenue should be deeply concerned about the problem of any other division which might be carrying more than its share of the burden of depressed prices.

Marketers Vociferous

"At the present time the jobbers and dealers have become articulate to the point of vociferousness. The unintegrated refineries are relatively few in number compared with the thousands who are engaged in marketing and production, and little has been heard from them in the midst of the present internal conflict. As an officer of an unintegrated refining company I would like to speak on behalf of that group in our industry.

"The situation of the refining division is most clearly shown

(*Continued on page* 19)

Low-Cost Tractors Seen As Boom to Farm Fuel Market

MILWAUKEE, Wis., April 18.—How a revolution in tractor manufacture is rapidly increasing the already sizeable farm market for petroleum products was outlined by George Krieger of Detroit, Ethyl Gasoline Corp., before the national tractor meeting of the Society of Automotive Engineers here last week.

Surveys by oil companies indicate that farmers use somewhere in the neighborhood of 25 per cent of all petroleum products consumed in the U. S. This is verified by the facts that 20 per cent of all passenger cars are on farms; 30 per cent of all trucks are on farms. There are 1,400,000 farm tractors in use and 3,500,000 stationary engines on farms.

This sizeable petroleum market was increased in 1937, Krieger said, by the sale of 278,000 new tractors, and from one-fourth to one-third of these were sold to farmers who never had a tractor before.

Since each tractor for the country as a whole uses an average of 1000 gallons of fuel a year, these figures mean an expanded fuel market of approximately 200,000,000 gallons, Krieger said.

In addition, with the present trend toward small tractors selling for less than $500, an entirely new market is opening up, it was pointed out, and the tractor industry visions sales of 500,000 units a year. These smaller units will comprise almost an entirely new market for petroleum fuels since they are particularly adaptable to use by the country's 78 per cent of the farmers who are classed as small farmers. Many of these have heretofore not been able to afford tractors.

The farm petroleum market is particularly important at this time, it was pointed out at the S.A.E. meeting, when purchasing power in industrial areas has dropped sharply with the recession. In contrast, 1937 was the best year the farmers ever had, Krieger said, and even the most pessimistic estimates compute the 1938 farm income drop at not greater than 20 per cent under 1937, a boom year.

Tractor Lube Problems

C. M. Larson, chief consulting engineer, Sinclair Refining Co., discussing tractor lubrication, said correction of common tractor service practices resulting from carelessness and ignorance of farmer users and local mechanics would eliminate most lubricating oil complaints. His paper was largely devoted to enumeration of experiences of misuse of tractors.

The lubrication engineer's biggest handicap in handling these complaints is that he is rarely given the opportunity to investigate at the time of failure and operators jump to the conclusion that the oil is at fault.

Lubricating oil consumption, contamination, dilution and oxidation rate have a direct bearing on the cylinder liner and ring wear and bearing life, Larson pointed out. The main problems for the lubrication engineer to consider, in addition to fuels, are brake mean effective pressures, temperatures, time of continuous operation, and bearing metals, he said. The value of addition agents for lubricating oil, particularly in diesel engines was pointed out in the results of tests by diesel engineers.

A warning was given to users of heavy fuels to use care in warming up engines and to make more frequent crank case drains. With the present increase in horsepower output per cubic inch displacement, engines were said to be more susceptible to ring sticking and piston ring and cylinder liner wear. The resulting higher temperature is most critical to the quality of carbon deposits.

As in his Kansas City paper (S.A.E. meeting, March 4), Larson stated that if the refiners developed oils any farther, "only the vehicle for cooling the bearings, pistons, etc., would be available and the real one to five per cent of lubricating material to wet the surface—to form film strength and give 'oiliness'—would be lacking." Even addition agents can not stop oxidation of the most stable oil at 350° F. or above and cracking at about 650° F.

E. R. Sloan Is Chairman Of Kansas Commission

TOPEKA, April 16.—Pursuant to the rotation in office policy, E. R. Sloan has been elected chairman of the Corporation Commission of Kansas, among whose duties is regulation of oil and gas. E. E. Blincoe is the retiring chairman.

New Lending Law Fails To Soften RFC Policies

By G. T. KELLOGG

N. P. N. News Bureau

WASHINGTON, April 18. — It still takes "adequate security" to get a loan from the Reconstruction Finance Corporation, despite glowing word-pictures painted by enthusiasts for the Glass amendment to the RFC Act, signed last week by President Roosevelt.

Powers of the RFC board are broad—it fixes interest rates, determines acceptability of risk —and about the main thing the Glass amendment did for the small-business-man was to lengthen the term for loans. And this determination is still left up to the RFC board.

Authorities here say that the new amendment is not going to cause RFC to start "throwing money out the window," nor will it bring about any change in the fundamental RFC policy, which heretofore has always called for adequate security — a reasonable chance of getting its money back.

Principal purpose of the amendment will be in allowing the corporation to participate in risks which the local bankers wouldn't take in their entirety.

This new shade in policy, it is believed, may make local bankers more ready to make industrial loans—if participated in by the government agency—and possibly even more willing to make 100 per cent loans of their own money.

While policies under the new law have not been entirely formulated, it is likely that the business man who goes to his banker for a loan of, say $10,000, and whose banker says he can handle only a half, or a third of it, but that he, the banker, will see what can be done through the RFC, will get at least a hearing.

Bankers' Judgment Weighed

The judgment of the local bankers themselves, as to the acceptability of the risks, will, in all probability, be given a great deal of weight by the corporation in determining whether the loan shall be made, it is pointed out.

There are no hard and fast rules on collateral requirements, ratio of quick assets to liabilities, or other factors. The RFC judges a risk in much the same manner as the local banker does. There are appraisers and local committees in each of the corporation's 32 loan agencies, and, because they are selected employes, the RFC relies on their recommendations to a large extent.

One of the rules, however, under which RFC loans have been, and will continue, for the most part, to be made is that "capital or credit, at prevailing rates for the character of loan applied for, must not be otherwise available."

Virtually all of the loans which the corporation has made, it is understood, have been made only after bank credit—100 per cent bank credit, at least—has been declined.

Specific Case

Sometimes it is easier and clearer to describe a specific case, even though it be fictional, than to cite a lot of regulations.

So, let us consider the case of a jobber, with a going business of $150,000 a year, who needs $10,000 in new capital to construct some additional storage. He wants to extend the loan over 10 or 12 years.

He may have been to his local banker several times, but, business conditions being what they are, the banker can't quite see his way clear to making the loan in the full amount for that length of time. He probably has tried a couple of other bankers, too, and got the same answer.

So he goes back to his local banker, having heard of the Glass amendments, and asks how about it now. The banker thinks it over and says he can let him have $3,000 or $4,000, and will recommend the loan of the remainder by the RFC.

He finds out that his RFC loan agency is in Chicago, so he writes to it, describing the situation. In a few days he gets a preliminary application blank, which he fills out, including the spaces which ask if he has tried at three banks or other financing agencies for the credit and been turned down.

It goes back to the agency, and an appraiser is sent out to look over the jobber's business, his books, and his prospects. The appraiser also talks to the jobber's banker, who tells him that he considers the loan a good risk, but that, under the circumstances, he doesn't see how he can tie up $10,000 for that long.

The appraiser, too, decides it's a good risk, and, since the loan requested is for less than $25,000, he sends it in to the RFC in Washington with his recommendation that the loan be granted. If the loan had been for more than $25,000, the applicant would have to fill out a second application form, giving more details.

Interest Usually Around 5%

The RFC board gets the application, considers it, knows that its appraiser is accurate, and knows that unless the local banker considered it a good risk he wouldn't be willing to put up more than a third of the money. So the loan is granted. The interest rate is probably about 5 per cent, as most RFC loans have been, or it may range up as high as 5.75 or 6 per cent, depending on the banker's and the appraiser's recommendation.

All the above is predicated on the assumption that the jobber is considered a good risk, first by the bank, second by the appraiser and the local committee, and third by the RFC board in Washington. It will be seen that there are plenty of snags where the loan could "hang up".

Under the old RFC law, the borrower would have had to repay the loan by 1945; under the new law, the corporation may determine the length of time for which the loan is to be made — but, it is pointed out, the policies of a conservative banker like the RFC are not likely to change overnight, so that he makes a loan for a 20-year period whereas before he has been making them for five or six years. Few loans, it is expected, will be made for more than a 15-year period.

But even after a loan is made, the RFC keeps pretty sharp watch over its money, and the operation of the business in which it is invested.

It has, when it found it advisable, put a manager in charge of a business in which it had a goodly sum of capital. This, however, has happened more often in the case of banks than other businesses. Again, it has been forced to foreclose, and take over a business. Usually, in this case, it closes down, and puts a watchman in charge of its property.

While there are no figures available as to the number of businesses which have been taken over by RFC, the percentage is described as "far from discouraging" to businesses seeking capital.

Some loans are in default as to interest payments today, and the businesses to which they were made are still operating, under an RFC-appointed manager (really a receivership).

While the corporation is not going to throw away any money, or take a chance on losing a loan through a slipping concern, RFC officials point out that a good adjective for its operations is "merciful."

Oil Industry Loans Few

The jobber mentioned above is purely a hypothetical case—in fact, loans made to the oil industry as a whole, including jobbers, refiners or operators in other branches, have been so few in the six years of the corporation's history that they are included in the "not otherwise indicated" columns of the tabulations of types of business, it was pointed out at the RFC.

So it will be seen that the Glass amendment does not mean an opening up of a new fount of capital for the small business man, or any other type. There will be no change in the collateral requirements, which have been and will continue to be decided to fit individual cases; there will be no change in the procedure; there will not be much more "credit priming" than before.

To get a loan from the corporation it will be necessary, as always, to make a showing to the board of directors that

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By Teletype

N. P. N. News Bureau

WASHINGTON, April 19. —RFC loan agencies, through which virtually all loans to businesses are handled, are located at:

Atlanta, Ga., Birmingham, Ala., Boston, Mass., Charlotte, N. C., Chicago, Ill., Cleveland, O., Dallas, Tex., Denver, Colo., Detroit, Mich., El Paso, Tex., Helena, Mont., Houston, Tex., Jacksonville, Fla., Kansas City, Mo., Little Rock, Ark., Los Angeles, Calif., Louisville, Ky., Minneapolis, Minn., Nashville, Tenn., New Orleans, La., New York, N. Y., Oklahoma City, Okla., Omaha, Nebr., Philadelphia, Pa., Portland, Ore., Richmond, Va., St. Louis, Mo., Salt Lake City, Utah, San Antonio, Tex., San Francisco, Calif., Spokane and Seattle, Wash.

Ethyl Suit Postponed

By Teletype

WASHINGTON, April 19. —Trial of the anti-trust suit against Ethyl Gasoline Corp., scheduled to come up in federal court at New York City this week, has been postponed, Department of Justice officials announced late today. Trial now will be "probably" during the week of May 3, it was said.

the chances of getting their money back are good.

A look into the history of the Glass amendment will give a clue to its purpose.

The big cry of small business, at its session here in February as well as before and since, has been "a procedure for the purpose of encouraging and facilitating loans to smaller business." A government procedure, of course.

Banks had been unwilling to supply the intermediate (three-to-five year) and long term (five years and more) capital not only because they hesitated to tie up their resources over such a long term, but because, in too many cases, there was not satisfactory bank security.

Chairman Douglas of the Securities and Exchange Commission, and others, advocated doing something for small business in the form of government-financed industrial credit corporations throughout the country, to buy up or make loans on the paper of small businesses.

Others in the administration were loathe to put the government in the permanent business of lending money to business — said it might eventually lead to government ownership of industry.

Most observers here agree that the Glass plan was put forward to head off the Douglas plan. The amendments do open up RFC's not-otherwise-earmarked $1,500,000,000 to a wider range of borrowers, but they still aren't making "Character loans." Incidentally, the $1,500,000,000 is just a figure — nobody expects the corporation to make loans of anywhere near that amount under its new authority.

Under the authority, the RFC could, if it wished, purchase common or preferred stock, but the chances are that it won't. It is possible it might take first mortgage bonds as security, and that it might make loans against stocks or bonds as collateral, but buy them — no.

Officials of the corporation have been quoted as saying that, while operations under the Glass amendment may properly be termed a part of the recovery program contemplated by the President, they can't operate on the theory that it's cheaper to make bad loans than to carry men on relief — that is, that it's cheaper for the government to keep a factory running when it is in default, or to advance it money to stay open when it is a bad risk, than to give direct relief to the men who would be put out of work should the factory be forced to shut down.

The small loss record of the RFC is testimony to the fact that it has used its power sparingly in the past; to think that it will do otherwise now, merely because it has a new law, is not plausible reasoning.

Jesse Jones Explains

An indication of the RFC attitude on its new law and the help it may offer is found in the radio speech of Chairman Jesse Jones over a nation-wide hookup tonight. Jones said:

"While our purpose will be to make business and industrial loans that will maintain or create work, we will not feel authorized to make such loans unless in our opinion the borrower will be able to pay the money back.

"Too much debt and inflation of values were the principal causes of the 1929 collapse, and prudent borrowing is just as essential as prudent lending. It does no good to lend a man, or a business, money which he will lose. It merely postpones the inevitable re-adjustment of his affairs.

"This does not mean we are not making every effort to lend to deserving borrowers, particularly where employment will be maintained or increased. We try to find a way to authorize every such loan for which we have an application...

"Apparently many people believe the recent amendment to our Act permits us to lend on a different basis of security than heretofore, and that a billion and a half dollars has been especially allocated by the Congress for this purpose. The facts are that Congress did not change the security provisions in our Act, nor did it increase our available credit for lending. . .

"We will lend for the construction of needed business buildings, where the project seems sound and the credit is not otherwise available."

All of which means that the Glass amendment does not furnish the answer to the small business man's plea for long-term capital with easier collateral requirements than his banker will give him — unless the Reconstruction Finance Corporation liberalizes its "banker" views.

It does mean, however, that longer term money is available through government channels if collateral is sufficient, and that if a borrower can get his local banker to participate in a part of his loan, and recommend the rest of it to the RFC, he stands a pretty good show of being able to make the long-term loan he seeks.

Oil Heat Campaign Stymied After Close of Burner Meet

By Teletype
N. P. N. News Bureau

CHICAGO, April 18.—Proposal for a joint national campaign by the petroleum and the oil burner industries to promote oil heat stood blocked today, at least temporarily, after the Oil Burner Institute closed its annual meeting here last week without taking action. The manufacturers argued they had already taken more part than the oil industry.

Discussions disclosed burner manufacturers were of the opinion they were not in a position to offer much financial assistance to such a campaign, and that in the past the burner manufacturer has promoted oil heat through individual campaigns.

Another point during the discussion, on the benefits to be derived from such a campaign, was on the returns from oil heat to the petroleum and to the burner industries. Figures were presented backing the position that the petroleum industry, in supplying fuel oil, has about five times the return from oil heat as does the burner manufacturer in supplying the heating equipment.

It was said that in Minneapolis a recent campaign was supported by about $50,000 from the burner industry against about $1000 from the petroleum industry.

Frank E. Spencer of Chicago, the Spencer Petroleum Co., conducted the discussion. Spencer is chief advocate of a joint national campaign to develop the market for oil heat by use of part of the advertising appropriation now spent to sell the burners and oil products of individual companies.

At the president's banquet, Baird H. Markham of New York, director of the American Petroleum Industries Committee, said business taxes are really pre-income taxes, collected at the source before the employe receives his pay or the stockholder his dividend.

Frank H. Dewey, of Detroit, general manager of the air conditioning department, Gar Wood Industries, was elected president for the coming year. Vice-presidents elected are L. L. Jacobs, Electrol; J. A. Lattner, Century Engineering Corp.; A. R. Reif, Reif-Rexol; F. H. Van Blarcom, Lynn Products Co., and J. H. Van Sciver, Bethlehem Foundry & Machine Co.

G. Harvey Porter was re-elected managing director and C. F. Curtin, assistant secretary.

Parking Survey

By Teletype
N. P. N. News Bureau

WASHINGTON, April 19.—A national survey to determine the extent and seriousness of the parking problem in the United States, and to find out what cities and towns are doing to provide relief, was announced today by the American Automobile Association.

Drive Planned In California On Discounts

N. P. N. News Bureau

LOS ANGELES, April 16.—Mass prosecution of service station operators charged with violating the California Fair Trade Act was seen within the immediate future following a decision by Superior Judge Emmett Wilson overruling a demurrer by a Los Angeles station owner accused of violating this act.

William Fritchley, operator of Bill's Super Service, was loser in a suit brought by the Retail Petroleum Dealers Association to restrain the station operator from allegedly selling Gilmore Red Lion gasoline at less than the 18-cent retail price nominated by the supplying company. The case is expected to go to trial at an early date.

In ruling on this case, the court declared the purpose of the California fair trade statute was to maintain retail prices stipulated by supplying companies and indicated a suit would be in order which would cite as violators of the act all station operators in a given area found to be selling below the nominated retail price.

Successful actions have been brought by Joseph H. Dasteel, R. P. D. A. attorney, in the past against individual operators for violation of California marketing statutes, but the new plan would name perhaps 50 defendants at one time, in an effort to clean up the marketing situation within a given trading area.

R. P. D. A. officials announced last week that investigators would make an immediate study of retail price conditions and would gather evidence against all stations found to be cutting prices on branded products covered by the Fair Trade Act. Additional suits are expected to be filed next week.

World's Deepest Oil Well Starts Geologist Debate

By Telegraph

LOS ANGELES, April 18. — California geologists were studying this week the importance to petroleum reserves on the West Coast of a recent completion by Continental Oil Co. below 13,000 feet in the floor of the San Joaquin Valley.

Gauged as having a potential production of at least 3000 barrels daily from Miocene formation, the well is expected to prove a point of issue on actual correlation of the producing sands with those responsible for production in other recent fields discovered beneath the San Joaquin Valley floor.

Regardless of these findings, Continental's Wasco discovery, KCL-A-2, is considered to have definitely proved existence of a structural trend along the east side of the Valley and to indicate other deep-sand fields may be found along the new axis.

Seismograph exploration has shown a definite high from the field of Greeley, discovered by Standard of California in 1936, through Rio Bravo to the north, in which Union Oil Co. discovered commercial production below 11,000 feet in 1937.

The Wasco producing sand is placed as about 800 to 1200 feet deeper than the Rio Bravo oil zone and about 2400 feet deeper than Greeley, but correlation of zones must await further study. Geologists differ in their opinions of whether the Wasco sand is similar to Rio Bravo or is equivalent of the Vedder zone — productive zone at Mt. Poso to the east.

Also a moot question is the probable size of the new field. Current estimates vary from 3000 to 6000 acres. Continental holds 2000 to 3000 acres within the probable limits and Standard of California holding several large blocks and Superior Oil Co. and the Getty interests likely to be in at the pay-off.

Present indications are that one or two other deep plays will be found in the 11 miles between Rio Bravo and Wasco.

A tribute to engineering skill, Continental's record-breaking deep producer was started out with medium weight drilling equipment that had all seen previous service of two to six years. Below 12,000 feet a new high speed rotary table and some auxiliary equipment was installed to cut drilling time.

It is estimated 225 tons of three-and-one-half inch drill pipe were needed to reach the absolute bottom of 15,004 feet and temperatures at that depth were recorded as approximately 270 degrees F. Coming out and going in the hole for a change of bits was accomplished in nine hours, at the lower depth.

To the depth of 11,000 feet, surveys showed bottom of the hole was directly under the derrick floor and only two-and-one-quarter degrees off vertical when the 15,000-foot bottom was reached.

The test project was completed in 285 days, 60 of which were spent in fishing for a drill pipe stuck at 11,600 feet. Immediately following recovery of the pipe, 7-inch casing was run to 11,573 feet. It is noteworthy that this string, one of the longest ever run, was put in place in eight and a half hours. It was 30-pound pipe.

Cost of the project is placed at about $300,000 and was not a joint test with other companies interested in the area.

Continental completed K.C.L. A-1, first test in the Wasco area, on April 26, 1937 for an initial production of 35 barrels a day. Present output from this well is 7 barrels daily. The depth is 9591 feet. Small production is attributed to a considerable quantity of iron in the hole. The 4½-inch drill pipe stuck at 9303 feet. This pipe had a drag bit on it which had a 2⅜-inch opening. This was reamed to 2⅝ inches and drilling was resumed through the bit using 300 feet of 1¼-inch tubing and a 2⅝-inch bit.

25,000th Well Drilled In East Texas

N. P. N. News Bureau

TULSA, April 16.—On April 13 the East Texas field reached the 25,000-mark in number of producing wells.

Some persons with long memories recalled that in 1931 the bolder spirited predicters said there might some day be as many as 10,000 wells in the field.

M. W. McVey drilled No. 25,000 in Kilgore townsite, on land belonging to Roy Laird, mayor of the town and a substantial landowner in the Kilgore area of the field. The well flowed 20 barrels in the initial 30-minute test.

Not many guesses are now being made as to the final number of wells. Thirty-five to 40 new wells are drilled in each week and development of the Kilgore townsite continues. Total producing acreage of the field is a little more than 138,000 acres and total production has been about one and one-quarter billion barrels, including a conservative estimate for "hot" oil produced and, of course, unreported back in the days before adequate laws were passed by the legislature.

Who Said Recession?

NEW YORK, April 18.—Earnings of Tide Water Associated Oil Co. for the first quarter of this year will show an improvement over the same period in 1937, according to William F. Humphrey, president. Net income was $2,687,764, or 42 cents a share as compared with $2,479,662, or 39 cents a share for the first quarter last year.

Wichita A.P.I. Meeting Lists Technical Papers

N. P. N. News Bureau

TULSA, April 18.—The American Petroleum Institute's eighth mid-year meeting program at Wichita, Kans., May 23, 24 and 25 will be devoted to technical papers on petroleum refining, production, research, fire and accident prevention.

The committee meetings and the four group sessions of the production division will be held at the Allis hotel, where the Institute's headquarters, registration desk and press room will be located.

The three group sessions of the refining division, the divisional committee meetings and meetings on fire and accident prevention will be held at the Lassen hotel.

Entertainment features of the program will include an informal dinner the evening of May 25, sponsored by the Wichita oil and supply companies, and the annual golf tournament May 26 at the Wichita Country Club.

Blocks Pipeline Tax

LITTLE ROCK, April 16.—Standard Oil Co. of Louisiana has obtained temporary order in circuit court restraining tax collectors and other officials of eight southern Arkansas counties from collecting taxes on pipeline properties of the company. Excessive assessment is charged.

State to Appeal 'Death Sentence' Given Oil Probe

HARRISBURG, Pa., April 18. —Steps to appeal the decision of the Dauphin County Court of Common Pleas, killing the state oil industry investigation commission, were being taken today by the office of Attorney-General Charles J. Margiotti.

The state would argue, his offices here said, that even though the commission was created by resolution, rather than an act of the state legislature, it was a duly created body since the resolution went through all the legal procedure required of an act.

The state would also take exception to the Dauphin County Court's ruling that the commission was illegal because it was granted power to investigate rates, and the legislature has control over rates only of public utilities.

Appeal of the lower court's decision is direct to the Pennsylvania Supreme Court, which convenes in Harrisburg next month. In event the oil commission should lose before the Supreme Court, the oil investigation would be permanently stopped, unless a new act creating an oil probe were approved by the next session of the state legislature. It does not meet until January, 1939.

The investigation commission was termed illegal and its funds stopped by a decision April 5 of Common Pleas Judge John E. Fox, who declared that the commission was illegally created in the first place, was granted unlawful inquisitorial powers, and that the business of lubricating oil and gasoline was not affected with public interest in a lawful meaning of the term.

Judge Ralph E. Smith of Pittsburgh, chairman of the commission, said that the decision will mean the "destruction of a great majority of the 18,000 producers operating independently." The producers' solicitude for the commission, however, was by no means unanimous. For example, A. E. Booth of the M. D. Booth Co., said:

"These consequences couldn't be nearly so tragic as they would be from political interference in oil production in the state.

"The solution of the troubles of the Pennsylvania oil industry lies with the producers; the investigation would not have helped."

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Warren C. Platt, *Editor and Publisher*
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One Plank in a Platform For a Sounder Oil Industry

Broader tank car markets.

More refiners, including majors, selling in those markets and more jobbers buying in them also.

Both buyers and sellers **Daily** making completed sales for prompt shipment of unbranded products.

Give Honor to the Conserver Of the Industry's Competition

By WARREN C. PLATT, Editor

The oldest association, I believe it is, in the oil industry, held its 35th semi-annual meeting in Cleveland last week. With the exception of most of the faces, it is the same association and stands for the same principles of fair competition for which it was organized so many years ago.

The association was born of the strife and warfare that had torn the Pennsylvania oil fields for more than forty years. It was organized to consolidate the efforts of the Independent refiners of that field for the gasoline market then just appearing. To its vigorous battles for competitive fairness the refiners of the west and most of the jobbers of the country can give credit for making their existence possible.

This patriarch of oil associations is the National Petroleum Association, still representative of the Pennsylvania refiner as well as refiners in newer fields but still representative of the small business enterprise, as stated by President Suhr when he called the meeting to order, even though in the course of events some of its early members have grown to major proportions.

The oil industry, including companies both large and small and in all divisions of the business, owes much to this remaining pioneer association; for it protected and fostered intelligent competition and the rules to protect such competition, all of which has made possible the natural growth of companies as the demand for petroleum products grew. There are major companies today which undoubtedly owe their existence to the fact that the path was blazed by the National Petroleum Association.

The American Petroleum Institute, on behalf of the whole oil industry, might well devote a session at its next annual meeting to honor the National Petroleum Association and all the other associations of refiners and jobbers that represent competition. The Institute has given all its thought heretofore to geology and producing oil, to building pipelines and to how to get the last drop of good products out of the oil at the refinery.

It could well give thought and discussion to that which has really made this industry great, that which in spite of the industry's difficulties, has kept it out from government control so far and that is its *Competition.* We may damn it at times, some may seek laws to curb it but we can all thank our stars that, imperfect as it may be, we have it, real *Competition.*

So why not give honor to the organization that did so much to rescue and preserve competition so many years ago and which has fought so ably to conserve it, The National Petroleum Association?

Should Broaden Tank Car Market

President E. V. Weber of the Ohio Petroleum Marketers Association, who sells under his own brands, spoke for a bigger and stronger tank car market, at the spring meeting of the National Petroleum Association at Cleveland last week.

"Recently a great deal has been preached and written about re-establishing a true spot tank car market price," said President Weber. "I readily recall the time when jobbers purchased at least 50% of their requirements on the open market and were able to operate at a profit. I believe in this system. But today many jobbers have abandoned this practice and instead are marketing the advertised brands of various refineries. In order to change our methods at this time would require an almost complete change of the merchandising policies of our industry. In my opinion, the former method has great possibilities."

President Weber should know, as he has for years operated at Cincinnati a most successful Independent jobbing business selling under its own brands. A few years ago he prevailed on several other Cincinnati jobbers with advantageously located service stations, to join with him in promoting "Good Luck" gasoline and motor oil, and "Good Luck" it seems to have been ever since.

NATIONAL PETROLEUM NEWS continues to invite all in the industry to participate in the consideration and discussion of how best to report the tank car markets, which invitation was outlined on page 23, April 6th issue.

Repeal Taxes for Debt Payment

If President Roosevelt and Congress really want to get some spending done by business, then let them remove all income taxes from businesses that owe more than current accounts payable. They might even include in that exemption those that owe for bonds also.

That would release money in the soundest way possible. Companies that owe money would pay their debts, as the cash came in instead of holding it for income and undistributed profits taxes. Such debt payments would put plenty of money in the tills of most every company as well as into the banks, but that which went into the banks could be gotten out by private companies, because they would be in sound condition to borrow and would have the incentive to go ahead and use borrowed money.

Paying debts would hasten companies into earnings by

relieving them of the debt interest, if they were paying interest. But more particularly, with some of their debts paid many companies undoubtedly would plunge at once into heavy purchases of new equipment and into driving on new ventures and for more business, all of which would require a bigger payroll.

Roosevelt's plan calls for loaning a billion or so to companies that, according to rules of sound banking, could not borrow any of that money at the banks today if they wanted to. But the companies that do borrow that government money would pay upwards of a 27% penalty in paying it back under Roosevelt's undistributed profits tax. The interest might be low but the tax on repayment would be high.

There are undoubtedly thousands of companies still struggling under the burdens imposed by the big crash of 1929, as well as under the present Roosevelt crash of 1937. The undistributed profits tax would just heighten these burdens.

There probably would be some chiselers and companies of wealth who would find ways to take advantage of any such lightening of the tax burden for debt, but what of it, if the vast majority of businesses were given a new lease on life and a chance to get out from under their troubles of the past?

The best way to get a job done by us human beings is to offer us a bonus for doing it; not hand us a penalty. "No income tax" would be the best bonus offered since the government started incomes taxes years ago.

We are no statistician but we would lay a curbstone guess that the government would not lose as much money this way as in making these new loans if the government is going to be as open handed as Roosevelt indicates, but which we doubt. Nor would the government lose as much money as might seem to appear, because every one will be digging hard to get into good earnings and to pass around the money for more employes and more supplies and equipment.

Also it would be a good way to keep business out of the hands of "Wall Street" and the professional stock sellers, where the undistributed profits tax would surely throw a lot of business men if it worked the way Roosevelt and his advisors say. But, maybe that is what the advisors want, to hand some business to their note-scalping friends?—W. C. P.

Farley Puts Ban On 'Bank Nights'

N. P. N. News Bureau

WASHINGTON, April 18.—"Bank nights," such as those held by many theaters over the country, and recently adopted by some stores and filling stations, are "lotteries," Postmaster General Farley has ruled, barring the originators of the scheme from use of the mails.

Farley named Charles U. Yeager and Rick Ricketson, officials of Affiliated Enterprises, Inc., of Denver, as originators of a patented plan under which the concern has sold licenses to thousands of motion picture theaters, hotels and stores throughout the country since 1935. The licenses permitted their holders to hold "bank night" according to the Yeager-Ricketson plan.

Under that plan, a participant in bank night entered his name and address in a "register," receiving in return a numbered slip. At the drawing, all the stubs were mixed, and the winning number drawn.

Substantial cash prizes are paid winners, providing they are present (in the case of movie theaters).

Only action against "Bank Night" was the barring of the originators from use of the mails as a "lottery."

Counsel for Affiliated argued before Post Office solicitor Karl A. Crowley (who, incidentally, has just quit to go to Texas to run for governor), that a bank night was not a lottery because, although it involved an element of chance and paid cash prizes, it did not require participants to purchase tickets. Department asserted, however, that compulsory registration of participants was a technical "consideration," and, therefore, bank nights were lotteries.

May 18 Is Marketers' Day At Tulsa Oil Exposition

By Teletype
N. P. N. News Bureau

TULSA, April 19.—Marketers' day at the Tenth International Petroleum Exposition in Tulsa has been set for Wednesday, May 18, by the Marketing Committee of the exposition. This date places the special day set aside for marketers almost in the middle of the eight-day show, which opens May 14 and closes May 21.

Exposition officials this year had to devote one entire building—the Marketers' Building—to the displays of marketing equipment, when 208 manufacturers notified them of their desire to have space at the show. This is the largest number of manufacturers of equipment of interest to the marketing branch of the industry ever to exhibit at the exposition.

Of special interest this year will be the large number of exhibits demonstrated in actual operation. The equipment to be shown ranges from small first aid kits to the large balloon type vapor saving devices.

Information relative to exhibits of marketing equipment at the Expo has been placed in the hands of secretaries of the various state jobbers' associations, for them to pass on to their members.

Some marketing companies with headquarters here have indicated that, on Marketers' Day, they will make it possible for their employes who desire to attend the Expo to have time off. It is expected employes will attend from Oklahoma, Kansas, Texas, Louisiana, Arkansas and Missouri. R. W. McDowell, vice president, Mid-Continent Petroleum Corp., is chairman of the Expo Marketers Committee.

Exhibits Going In

Out at the Expo grounds, Drake Drive is taking on the appearance of an oil boom town, with hundreds of workmen putting the finishing touches on new buildings and getting ready to install the exhibits of heavy drilling equipment.

W. G. Skelly, head of Skelly Oil Co., president of the Expo, has estimated that attendance at the coming Expo will reach 200,000 and that 35,000 outsiders will visit Tulsa. A Housing Bureau Committee, headed by Earl Sneed, of the Sneed Royalty Co., is handling requests for living quarters.

R. O. Dietler, vice president of the Stanolind Crude Oil Purchasing Co., and chairman of the Tulsa Chamber of Commerce Exposition committee, has appointed Judge Krit Logsdon chairman of the "Host" badge sale committee. These badges will admit the wearer to the Expo grounds at all times and the wearer will also serve to welcome out of town visitors.

The 25-acre plant of the Expo will have 16 new buildings constructed as permanent exhibit structures by the following firms: Halliburton Oil Well Cementing Co.; Clark Bros.; Fred E. Cooper (Tractor Division), Allis Chalmers Co.; Continental Supply Co.; Oil Well Supply Co.; Mid-Continent Supply Co.; International Supply Co.; Geo. E. Failing Supply Co.; Bovaird Supply Co.; Frick Reid Supply Co.; Hinderliter Tool Co.; W. C. Norris Co.; International Harvester Co.; Gaso Pump and Burner Co.; Petroleum Engineer Publishing Co., and Portable Rig Co. This will raise the number of this type of buildings to 42.

Can't Choose Trucker, Says ICC Decision

N. P. N. News Bureau

WASHINGTON, April 18.—The mere desire of a shipper to engage the services of a certain trucker as a contract carrier "is not sufficient grounds for granting them (truckers) the right to enter the trucking field."

This rule, laid down by the ICC late in 1936 in a decision on the application of C. & D. Oil Co., Everett, Mass., for a contract carrier permit, was dusted off last week by a joint board which used it as the basis for recommending denial of a similar permit to Eastern Shore Oil Co., Salisbury, Md.

Eastern Shore, Salisbury jobber, purchased a new 3300 gallon truck to haul its own supplies, and was importuned by other jobbers to bring in their supplies, for which operations it sought ICC permission. The joint board recommended, however, that the application be denied since some of the companies for whom Eastern Shore proposed to haul already were served by existing rail, barge and truck facilities.

Operation, for which ICC approval was sought, were from Baltimore, Philadelphia and Wilmington, Del., to points in Delaware and on Maryland's Eastern Shore.

The company already hauls gasoline, kerosine and fuel oil to its own storage near Salisbury, but no ICC permit is required for this operation.

New South Carolina Truck Law Nears Governor for Approval

COLUMBIA, S. C., April 18.—South Carolina's law prohibiting trucks weighing more than 20,000 pounds, and measuring more than 90 inches across, from the highways will be a dead issue if Governor Olin D. Johnson signs the new bill passed last week by the state's House of Representatives following a bitter fight by the railroads.

A bill providing for a maximum weight of 40,000 pounds and maximum width of 96 inches, sponsored by farmers, oil companies and truck operators of the state, finally passed the House at 7:30 a.m. Thursday, April 14, following an all-day and all-night one-man filibuster by Rep. M. V. Horne, Columbia, yardmaster for the Southern railway when he is not in the state legislature. It had already been passed by the Senate.

About the only railway "victory" in the bill was the "performance factor" which said trucks must go at least 20 miles per hour on a five per cent grade, but proponents of the measure said they are not alarmed at this provision.

This is one of the major victories for truckers over the railroads in a long fight against maximum size and weight laws. The South Carolina 20,000 pound law was upheld by the United States Supreme Court in January, following lengthy litigation.

In upholding the law, the high tribunal said in effect that, while the Interstate Commerce Commission has power to inquire into need for federal regulation of truck sizes and weights, it has not exercised this power, and until it does, the states shall have the right to enact and enforce laws governing such regulations.

Since that time, activity by trucking interests, led by the American Trucking Associations, Inc., has been directed toward federal size and weight regulation. The ATA and other interested organizations have been drafting a bill authorizing and directing the ICC to regulate sizes and weights.

While this bill has not yet been presented to Congress, it is understood that the House subcommittee considering other ICC-recommended amendments to the Motor Carrier Act, affecting procedure largely, has been studying the truckers' proposal, and is considering including it in the amendments which it recommends that Congress make to the Motor Carrier Act, under which all interstate trucking operations are conducted.

Meanwhile, the ATA and other trucking bodies have pending in Kentucky courts an attack on that state's restrictive size-and-weight law (18,000 pounds) as a bar to interstate commerce. However, all concerned are biding their time pending report of the Sadowski (Mich.) subcommittee of the House Interstate Commerce Committee to see if it contains a provision directing the Interstate Commerce Commission to make uniform regulations for the entire country as to truck weights and sizes.

Virginia Jobber Attacks City Inspection Fee

By Telegraph

LYNCHBURG, Va., April 19.—Legality of Lynchburg's 10-year old gasoline inspection ordinance, which levies a flat inspection fee of $5 per compartment on all gasoline brought into the city, is expected to be ruled upon by Municipal Judge J. P. McCarron here April 21.

The ordinance was attacked in court last week by the Lynchburg Oil Co., whose attorney contended it is in conflict with the state gasoline inspection law.

After a hearing the court took the case under advisement.

The oil company also charged the ordinance with responsibility for "the high cost of gasoline in Lynchburg." Witnesses said that at times gasoline was as much as three cents a gallon more in Lynchburg than in Roanoke, only about 50 miles away.

Besides the flat $5-per-compartment fee, which virtually bars hauling of products into the city by compartment trucks, the ordinance requires that all shipments be held until the city inspector has tested them and given the authority for unloading.

Under the state law, company attorneys argued, the public bears the cost of testing, whereas the Lynchburg ordinance makes the dealer pay the costs.

It was further pointed out that, since the great proportion of gasoline sold in Lynchburg comes from Richmond, it undergoes two local inspections—one at Richmond and one at Lynchburg. Frequently the same gasoline is inspected by the state, which, it was pointed out, makes tests at random.

Few, if any, shipments into Lynchburg have ever been condemned, it was said.

Poll of Oil Truckers To Decide Rate Hike

By Telegraph

LINCOLN, Nebr., April 18.—A poll of oil truckers in Nebraska on increasing rates, following the recent railroad rate advance, is being taken by C. M. Sutherland & Sons, Lincoln, operating The Transporters' Service Bureau.

A 7.7 per cent increase would bring petroleum transport rates to about 92 per cent of rail rates, transporters were informed in the organization's bulletin announcing the poll. To have a uniform increase about 150 carriers would have to file new schedules.

Transporters were informed that rates may be increased from some points of origin, and not from others, if the carrier so desires.

Announcement of the poll warned carriers that before a new rate schedule takes effect new contracts must be filed calling for the new rate, as carriers are bound by contracts now on file with the Interstate Commerce Commission.

"We have not as yet filed any new rates for any carrier," the announcement said. "There seems to be much divided opinion among the carriers that we have come in contact with lately, as to just what should be done."

Superhighway Proposal Revival Blocked

N. P. N. News Bureau

WASHINGTON, April 18.—An attempt to revive the Bulkley plan for 10 transcontinental and "border-to-border" superhighways in the Senate has resulted only in tamping it the more solidly in its grave.

A motion to reconsider the action by which the Senate several weeks ago voted to discharge the Banking and Currency committee from consideration of the measure and refer it to the Post Office and Post Roads Committee was defeated by a vote of 32 to 29.

The Banking and Currency committee was regarded as favorable to the billion-dollar proposal, whereas the Roads committee is definitely unfriendly.

ICC To Probe Trucking Rates In New England

N. P. N. News Bureau

WASHINGTON, April 18.—A third general investigation by the Interstate Commerce Commission into the rates and practices of (common) motor carriers in an extended territory has been inaugurated by the Commission as an *Ex Parte* proceeding—that is, started on the commission's own motion.

This probe will go into motor carrier rates in New England, and hearings will be held April 29 at Boston. Hearings in the investigation of rates and practices of common carrier trucks in Central Territory (NPN, April 13, p. 15) will begin April 26 at Chicago, the commission has announced.

Midwest Contract Haulers

At the same time, truckers in Central Territory (Midwestern states) have asked the ICC to also investigate rates and charges of contract truckers in that area, with a view to establishing "reasonable" minimum rates. This request was submitted to the commission by Central States Motor Freight Bureau.

Most petroleum products move by contract truckers rather than common carrier truckers.

These general investigations are expected to result in prescribing by ICC of minimum charges for the truckers in the various areas. Heretofore, the motor carriers had not been subject to any minimum rate orders, as had the rails, although the ICC required that they file their charges with the commission.

New Baron-Huot Plant

KANKAKEE, Ill., April 18.—A new bulk plant is to be built by the Baron-Huot Oil Co., of Kankakee, at Plano, Illinois. The ground lease was signed last week. Construction is to begin at once. Storage capacity will be 100,000 gallons.

The company has been supplying the Plano territory from the Joliet bulk plant. The new plant will serve Plano and the territory west to Mendota.

PHILADELPHIA — Officers elected recently at 25th annual meeting of the Oil Trade Assn. of Philadelphia Inc., were Charles D. Jones, president; C. A. Borda, vice president; Howard M. Rogers, secretary, and James H. Stevenson, treasurer.

Oil Truckers Renew Fight On Nebraska Sunday Ban

LINCOLN, Nebr., April 16.—A four-day hearing was held here April 11-14 in Lancaster County District Court on the petition of oil truckers for an injunction against Nebraska's law banning transport trucks from operating on Sundays and certain holidays.

Witnesses for the petroleum transporters emphasized the added cost the law piled on oil truckers by depriving them of 54 operating days each year. It was contended that the stringent law conflicts with Interstate Commerce Commission regulations.

Among the transporters supporting the attack on the truck law were: Jason W. House, Silver Creek; George Corner, Blue Hill; Terry Carpenter, Scotts Bluff; C. J. Hargeroad, Hastings; C. H. Leinholz, Friend; L. D. Essinger, Holstein; George E. Johnson, Jacob Niderhaus, and C. D. Lampert, all of Lincoln.

The state's defense of the law prohibiting Sunday operations dwelt heavily on the "safety factor," producing in court trainmen allegedly burned in collisions between trains and transport trucks.

Two rounds have been fought in the battle over Nebraska's new truck law. The transporters won first, obtaining a temporary restraining order against enforcement of the law, which, besides banning Sunday operations, also tightened up regulations, required compulsory liability insurance, hiked permit fees, and set maximum hours of service for drivers. Then, the state won a round on Feb. 3 when the court dissolved the restraining order.

Decision on the request for a permanent injunction is not expected for 30 days or more. Truckers have been given 10 days to file their briefs, after which the state has 10 days more to reply, with the truckers allowed five days on top of that to reply to the state's briefs.

Private Carrier Regulation

Another cloud on the trucking horizon of Nebraska is a proposal, under consideration by the Nebraska State Railway Commission, to regulate private motor carriers.

A hearing was held April 6 for businesses their own goods in their own trucks delivering to "show cause" why they should not be subjected to regulation and be required to make the same charge for delivering as common carriers would.

Jobbers and wholesalers in many lines protested vigorously against the proposal.

Some large Omaha business concerns threatened to move across the river to Council Bluffs, Iowa, if the plan goes through. They pointed out that companies trucking their own merchandise couldn't hope to compete in eastern Nebraska with Iowa firms, if they had to add to their regular sale price, trucking charges equivalent to common carrier rates.

Reed S. Williams Dies

OIL CITY, Pa., April 18.—Reed Stephen Williams general superintendent of the West Virginia division of the South Penn Oil Co., died last week at his home in Parkersburg, W. Va., of pneumonia. Williams had been with the South Penn Oil Co. for 30 years.

C. E. Perryman Dies

HOUSTON—Charles E. Perryman, Mid-Continent district manager for American cable division of the American Chain & Cable Co., died April 12 in Houston from heart attack. He was 54 years old.

ICC Suspends Cut In Massachusetts Rates

N. P. N. News Bureau

WASHINGTON, April 18.—Tariffs filed by the New Haven railroad proposing to reduce the freight rate on petroleum products from the Providence, R. I., district to North Attleboro and Plainville, Mass., because of "motor competition," have been suspended by the Interstate Commerce Commission pending an investigation.

The railway sought to reduce the rates from 5.5 to 4.5 cents in order to meet truck competition. The new rates were to have gone into effect this month, but were suspended to Nov. 11, during which time the ICC will investigate into the proposal.

Hearing Set On Valuation For Humble Pipe Line Co.

N. P. N. News Bureau

WASHINGTON, April 18.—Hearings will be held here before an Interstate Commerce Commission examiner May 20 on the protest of the Humble Pipe Line Company against the tentative valuation of $59,500,000 placed on its carrier-owned-and-used properties by the ICC's Valuation Bureau.

The tentative valuation, one of approximately 55 to be issued under the valuation orders of the commission late in 1934, is protested by the company as too low. The valuation orders said the values of the lines were to be set "for rate making purposes."

Humble claims that its operating oil supply was erroneously excluded from the tentative valuation report, that the allowance made for working capital was insufficient, that the value of lands and rights of way were improperly determined, that the report gave no analysis of the methods used in computing depreciation, that the "going concern value" was not sufficient, and that as a result the final value was too low.

ICC attaches said today that the pipeline rate case (Docket 26570) brought before it several years ago might be reopened "any time now," but would hazard no forecast as to when hearings might actually be set. The case is on the personal docket of Commissioner Aitchison, who has been busy with the general railway freight cases for the past several months.

It is not likely that reports on all the 50-odd pipelines subject to the valuation orders will be completed in time for the hearings, which are expected before midsummer, but it is said at the ICC that the valuations which have been arrived at by the date of the hearings will probably be studied by the commissioners in arriving at their decision on the rates.

Operating Revenue

The commissioners will find, in studying the report on the Humble company, that its net revenue from operations in 1934, the year of valuation, was $10,201,346.50, a little less than 20 per cent of the tentative valuation fixed on its properties by the Valuation Bureau, and that its net income that year was $7,786,420.48, of which $4,766,066.40 was appropriated to dividends to stockholders.

Similar statistics are given for all companies subject to the valuation orders, as well as figures for later years, which are included in annual statements which must be filed with ICC.

Western Rails Handed Problem Of Differentials

N. P. N. News Bureau

WASHINGTON, April 18.—Traffic representatives of western railroads will meet in Chicago sometime this week or early next to consider the plea of independent refiners and marketers for restoration of the rate differentials on petroleum products between Group 3 and other origin points to the position occupied before the 10 per cent freight rate increase.

The petition, which pointed out that the horizontal 10 per cent increase granted by Interstate Commerce Commission, together with the fraction tables filed by the railroads, distorted these previously established differentials, was turned over to the western traffic managers following an all-day meeting here April 15 of the railroads' Ex Parte 123 committee.

The committee, formed to make adjustments necessitated by the rate increase, considered the petition and is understood to have discussed it with ICC officials.

J. A. Farmer, chairman of the Western Traffic Executives' Committee, also is a member of the committee which met here to discuss the petition last week.

Petitioners pointed out that the rate increase upset the differentials, stated in cents per hundredweight, which had existed for years with respect to shipments from Group 3 and from other originating groups in oil producing areas, and asked that ICC require the railroads to re-establish those differentials. (NPN March 30, p. 9.)

The commission turned the petition over to the ExParte 123 committee of the railroads, (NPN, April 13, p. 23), which in turn has sent it to the Western railways traffic men.

Derby Management Wins

WICHITA, April 16.—Directorate favorable to the management of Derby Oil & Refining Co. was elected in the annual meeting held in New York. Some stockholders had sought proxies, opposing the management's policies.

Officers were reelected by the directors. A. L. Derby, founder of the company, was returned as chairman and Berkeley Williams, postmaster of Richmond, Va., was reelected president.

Mexican Oil Situation Has not Boomed Gulf

By LAWRENCE E. SMITH

TULSA, April 16. — The temporary cessation of shipments of oil from Mexico because of governmental expropriation of properties and failure, as yet, to begin execution of the several rumored contracts for large amounts, have not resulted in materially increased movement of oil from coastal ports.

The opinion is that those who have been buying Mexican oil are in position to wait to see how the diplomatic and other negotiations with the Cardenas government turn out, are not in a hurry to arrange for replacement of supply with oil from fields of the Mid-Continent and the Southwest. The widely publicized overproduction-proration situation existing in the U. S. has, of course, led to the belief among foreign buyers that no penalty in the form of price advance will be sustained by waiting.

Resumption of navigation on the St. Lawrence River to Montreal and Toronto will soon result in renewal of crude oil shipments from Gulf Coastal ports. Canadian refiners who use Texas oil accumulate stocks at the ports over the winter, move them to refineries through the spring and summer each year. Such movement is soon to get under way.

No outstanding changes in the supply-demand situation occurred through the past week. Buyers' proration, sometimes known as pipeline proration, was unchanged from previously announced takings. Nearly all purchasers are taking in Kansas less crude oil than the state regulatory body prescribes as the legal production, and in Oklahoma two major purchasers are taking 80 per cent of the allowable, exempting small wells. There has been some shifting of connections in the Oklahoma City field, because of the withdrawal of two buyers, but at latest reports new arrangements had been made for all but two leases that were relinquished.

Sinclair Prairie Oil Marketing Co. announced that on May 1 it will cease purchasing oil in the Moran (Kans.) area. About 400 barrels daily of 22-25 gravity oil are thus to be diverted elsewhere. The affected properties are in Allen and Bourbon Counties and recent increases in output because of water flooding made it impossible for the Sinclair company to serve the area without laying more pipeline. It is probable that for a time this oil will have to be moved by tank car.

While nobody entertains the thought of a crude oil price advance, there really was one on April 13. Placid Oil Co., owned by H. L. Hunt and associates, announced a five-cent advance on the grade 46 gravity and above in the Cotton Valley field, Webster Parish, Louisiana. Top price was brought to $1.27. The company said it had developed a new market for this high gravity crude.

The time approaches when oil and gas commissions must consider the state of the industry and decide upon allowable production for May. First of the hearings is that of the Texas Railroad Commission, set for April 18. Belief is that the commission will again order the Sunday shutdown, or one-seventh reduction, to continue through May. This is about the only way that restriction of daily output can be effected so as to conform to the demand.

Texas law provides a "marginal" allowable for each well in the state. The amount depends upon well depths. In the East Texas field, for instance, the drilling depth calls for allowable of 20 barrels per well. There has been considerable discussion of the meaning of the statute, some contending that the legislature meant merely to safeguard wells incapable of making more than the amount set out in the statutory schedule. The commission, however, has construed the law to mean that wells cannot be prorated below the amounts specified, regardless of their capacity to produce.

Result of the big development in Texas in the past two years has been to bring about a condition of having little proratable oil left. The more producing wells there are, the greater the total of marginal allowable. Figures showing this condition were released the past week by the commission. On April 1, the total allowable for the state was 1,531,933 barrels, not considering the Sunday shutdown. Of this total, only 410,936 barrels were proratable. This amount was accredited to 47,269 wells which were capable of making more than their allowable; there were 32,636 wells which were incapable of producing more than the statute designates as the minimum.

Concerning East Texas, where marginal allowable on April 1 represented 98.2 per cent of the total field allowable of 502,168 barrels, the commission statement said:

"As of April 1, 1938, there were 24,816 wells in the East Texas field which had a total daily allowable of 502,168 barrels, of which 493,226 were absorbed by marginal allowable, leaving only 8942 barrels of proratable oil to be allocated to the 24,368 proratable wells in the field."

Thus, the Sunday shutdown is the only method that could be used in East Texas to achieve any reduction of consequence and, to preserve the equities between this and other fields, the plan is applied to all fields, stripper and flush.

Bright Stock Inventories Cut At Mid-Continent Refineries

By Teletype
N. P. N. News Bureau

TULSA, April 19.—Bright stock inventory in the Mid-Continent was reduced 35,000 barrels in March while shipments were 76,000 barrels higher than in February, according to the Western Petroleum Refiners Association lubricating oils statistics for March. Statistics are based on reports of operations of 12 member companies reporting.

Viscous neutrals stocks also were reduced in March, the new inventory devel of 185,197 barrels being 67,000 barrels under the February inventory. Shipments in March were 80,000 barrels higher than in February.

Despite the fact that bright stock production, in March was higher than in March 1937, and shipments were lower, inventory March 31, 1938 was 118,000 barrels higher than March 31, 1937.

Stocks of viscous neutrals were 33,000 barrels lower in March than they were at corresponding period in 1937.

Following table compares bright stock and viscous neutrals operations for March with those for February and March 1937. All figures are in barrels.

	March 1938	February 1938	March 1937
BRIGHT STOCK			
Production	151,282	124,557	139,248
Shipments	186,385	119,160	193,757
Inventory	421,336	456,439	302,529
VISCOUS NEUTRALS			
Production	149,381	130,583	166,104
Shipments	216,600	135,959	216,395
Inventory	185,197	252,416	229,057

Credit Men's Program Lists More Papers

PHILADELPHIA, April 14.—Two additional papers and some other changes have been announced for the forthcoming second annual conference of the Petroleum Refiners and Marketers Credit Groups of Eastern and Western Pennsylvania. This conference will be held April 25 and 26 at the Penn-Harris Hotel, Harrisburg, Pa.

The new papers, to be presented the morning of April 26, and their speakers, are: "Let's Start to Stop," by J. R. Harding, Richfield Oil Corp. of New York; and "Uniformity of Forms," by H. V. Johnston, Gulf Oil Corp.

The paper on "Working Tools of the Credit Manager," as previously announced, will be presented by T. M. Demarest, The Conewango Refining Co., Warren, Pa.

J. A. Lorimer, Standard Oil Co. of Pennsylvania, will talk on "Merchandising and Its Relationship to Credit," instead of R. D. MacEachern, Tide Water Associated Oil Co., New York, as previously announced.

The paper, "The Importance of a Definite Understanding with Customers Concerning Terms and Credit Limits," by H. E. Lawrence, Pennsylvania Oil Products Refining Co., Warren, will not be given.

These changes were announced by Samuel Ardron, Jr., secretary-treasurer of The Credit Men's Assn. of Eastern Pennsylvania, sponsoring the meeting. This association is affiliated with the National Assn. of Credit Men.

Chicago Oil Men Meet

CHICAGO, April 18—The Chicago Oil Men's club first party of the spring season will be April 28 in the reopened club rooms. The party will start at 6 p. m. with dinner, followed by bridge.

Standard Oil President Attacks State Proration

(*Continued from page* 10)

by the Refinery Index which is published each month by the NATIONAL PETROLEUM NEWS. This index shows the margin between the posted well price for 36 gravity crude oil in Oklahoma and the Oklahoma wholesale tank car prices of typical products of a barrel of crude oil. This is the margin out of which an Oklahoma refinery must endeavor to achieve a profit after paying the charges for gathering and transporting the oil from the well to the refinery and all of the manufacturing expenses and overheads of every kind. It is rather generally accepted, and this was supported by the studies made by code authorities during the N.R.A., that such a refinery needs at least 55 cents a barrel to cover such costs and expenses, and some claim that the amount is perhaps as high as 60 or 65 cents.

"The Oklahoma refinery situation is fairly representative of the economic condition of the entire refining division, so that we may say with reasonable accuracy that when the Refinery Index is above the range of 50 to 55 cents the refining division is probably operating at a profit, but that when that index falls below that range the refining division is probably operating at a loss.

Cites N.P.N. Index

"The NATIONAL PETROLEUM NEWS began publishing its Refinery Index in September, 1935. My own organization has calculated this index upon the same basis back to 1928. It may be of interest, therefore to you refiners to examine the following refinery index figures from 1928 to note the margin within which the refining division has had to operate in those ten years. These figures are as follows:

Margin Between Wholesale Value of Typical Refined Products of an Oklahoma Refinery Versus Well Price of 36 Gravity Oklahoma Crude Oil (Called by N. P. N. "Refinery Index" and Representing the Refinery's Margin to Cover Transportation and Refining Cost)

1928	$0.627
1929	0.631
1930	0.468
1931	0.345
1932	0.353
1933	0.443
1934	0.352
1935	0.531
1936	0.561
1937	0.526
1938 1st Quarter	0.326

Crude Overproduction Blamed

"The present situation is not due fundamentally to over-production of refined products but rather to the over-production of crude oil and production capacity. Refinery gasoline stocks in 1937 rose about 14 million barrels and heavy fuel oil about 9 million barrels, but during the same period crude oil stocks increased about 18 million barrels. * * * The total increase in stocks of crude oil and its products in 1937 clearly shows that there has been over-production of crude oil, and, as a matter of fact, crude oil production in most of the leading oil states operating under proration exceeded the allowables set by the state authorities in practically every month of the year.

"Even these increases in above-ground stocks do not tell the whole story. They were symptomatic of the whole general tendency toward over-supply which, it is becoming clearer, had been in the making for a couple of years. For example, the number of oil wells drilled in 1937 increased by 28 per cent over 1936 and by more than 50 per cent over 1935.

"In spite of all this basic over-production and the resultant reduction in prices of finished products there has been no reduction in the share of the industry's gross revenue enjoyed by the production and pipeline divisions and only a slight reduction in the marketing margin, so that almost the entire burden of the decline has fallen upon the refining division. A number of unintegrated refineries already have had to close.

"Even if a reduction in prices may be primarily due to the actions of one particular division of the industry, we must recognize that we are a part of an unusually closely integrated industry in which there is really a single continuous process from crude oil production to final delivery of products, and that, therefore, the fortunes of the various divisions of the industry are so bound together that under a free operation of economic forces we must share prosperity and adversity together, regardless of its cause, except in so far as the policy of Public Utility and Interstate Commerce Commissions prevents. Manifestly, there cannot be flexibility of pipeline tariffs responsive to temporarily changing conditions, and to that extent the pipeline division cannot participate in the financial vicissitudes of the industry. To the extent, however, that such pipeline tariffs, from a long run point of view, extract an undue proportion of the industry's gross revenue to the pipelines, there is room for a more equitable sharing by them of the industry's average revenue.*

"There should, however, be no other rigidities in the interior price structure due to governmental regulation or assistance, and from the long run point of view of the welfare of the industry as a whole and of each of its members there should be prompt flexibility in every price within the industry. Unless our industry can reachieve and maintain such flexibility we can hardly hope to continue as an integrated industry and a free enterprise."

Jobber's Problems Discussed

When President Holliday mentioned the vociferousness of jobbers and dealers, he presumably referred to the marketing divorcement bills now pending in Congress and the fair trade laws.

Jobber advocacy of marketing divorcement bills is not 100 per cent, however, and one of them who has signified his intention to appear in Washington in opposition to the bills is Eric V. Weber of Cincinnati, O., president of the Eureka Oil Co. and of the Ohio Petroleum Marketers Assn., who spoke at the N.P.A. meeting.

Weber took occasion to present his views on the jobber's problems and how they could be remedied. He said that jobbers suffered from lack of leadership, deploring the fact that some marketers had rushed to Congress and the state legislatures for assistance. However, he laid some of the blame for the jobber's grievances at the refiner's door.

Full text of the National Petroleum Assn. speech of Eric V. Weber, Cincinnati, president of Ohio Petroleum Marketers Assn., is printed on Page 33 of this issue.

Weber also endorsed proposals for re-establishment of a "true spot tank car market price."

As publisher of *The Oilgram*, the remarks of W. C. Platt on this point before the National Petroleum Association, were particularly pertinent: "Maybe a whole week will go by and only one refiner will sell a few cars on the open spot market. That's one of the troubles of the jobber. He is basing a price of branded gasoline he buys on the unbranded gasoline market, and that market is getting smaller. . . ."

In as mystic a jargon as pervaded the technical session on "Propane Treatment of Lubricating Oil Stocks," oil company tax experts exchanged information on their troubles under the corporation income tax, social security tax, pipeline transportation tax and miscellaneous manufacturers excise taxes.

Speaking on the 1938 federal tax program being evolved at present in Congress, Thomas E. Shearer of New York, Prentice-Hall, Inc., (tax service), said, "Due to the suggested changes in the undistributed profits principle, there is a widespread belief that the new bill in its present form offers complete relief and results in a much simpler tax program. The facts appear to be to the contrary.

"Under the present law, a corporation pays a normal tax at graduated rates of 8 per cent to 15 per cent on its net taxable income. Under the proposed law, corporations with net taxable incomes of $25,000 or less will pay a normal tax at graduated rates of 12.5 per cent to 16 per cent. Corporations with net taxable incomes in excess of $25,000 will pay a normal tax of 20 per cent, less a small credit for dividends paid.

Trends in Social Security tax regulation which oil men should watch for, as outlined by Maxwell E. McDowell of New York, head of the tax department of Standard Oil Co. of New Jersey, included:

1. The Internal Revenue Bureau is going behind the words of dealer—lessee contracts to determine whether there is "control" of the dealer by the supplying company.

2. Broadening of the coverage of the Social Security Act, such as for marine employes and domestics.

3. Legislation will be in a trend away from employe participation in payment of these taxes.

4. There are some who would deprive high income groups of Social Security benefits, but the bet is on increasing liberalization of benefits.

5. There may be growing the movement for "pay-as-you-go" basis. That is, the benefits paid

* Pending before the Interstate Commerce Commission at the present time is a brief attacking pipeline rates charged by the Oklahoma Pipe Line Co. and the Illinois Pipe Line Co. filed by Standard Oil Co. (Ohio) and the National Refining Co. The brief was filed in July, 1936. The two companies used the lines to transport crude from Oklahoma to Ohio refineries.

in any one year would be just sufficient to meet the obligations that year. Under the present Social Security plan, theoretically at any rate, a fund for future payments is accumulated by the government.

Union Claims Lessees

Tax laws sometimes go beyond the field of taxation into the realms of politics said McDowell, and John E. Winslow of St. Louis, tax department of the Shell Petroleum Corp., provided a current illustration.

In recent hearings before the Wisconsin Commission on whether or not dealer-lessees were independent merchants, Winslow explained, a labor representative argued for one and one-half hours that such dealers were actually "employes" of the suppliers.

It is important to the labor union that station operators be ruled employes, Winslow explained, because otherwise — since many station operators hire attendants—they will be classed as employers. Under the Wagner Labor Relations Act, employers are precluded from contributing to a labor union. This provision was doubtless included to kill the company union, but the effect in this case would be to deprive the unions of memberships of employing dealers.

Broadening Pipelines Tax

Recent decisions indicated that the Treasury Department is moving toward the view that any movement of oil through pipes is taxable transportation, George Koegler, tax specialist, told the N.P.A. Tax assessments have been made recently on the loading and unloading of tankers on the theory that pumping oil to and from the ships was transportation.

Koegler suggested that the industry combat such assessments by showing all facts surrounding the movement including length of line, type of line, whether operation is a local piant facility, whether the federal government has ever sought to bring such a movement under regulation, and whether the owner of the line has exercised the right of eminent domain in getting right of way.

An important fact to call to the attention of taxing authorities who seek to impose assessments is whether railroads make a charge for a similar service, a charge over and above the cost of transportation, he said.

General discussion developed that idea that many oil tax experts lean to the opinion that an amendment to the 1932 revenue act defining "transportation" is necessary. If this is not done, it may be necessary to fix a valuation on loading lines and set up rates which will give an adequate return from the oil company to itself.

On Mr. Roosevelt

Dr. George Gallup, director of the American Institute of Public Opinion, explained that the institute, underwritten by 63 newspapers, has 600 field workers polling the country on various questions.

"You can definitely put it down that President Roosevelt is 'out' as far as a third term is concerned," he said. This brought applause from the assembled oil men.

To such oil men as contemplate polling consumers regarding their products, but hesitate because of assumed high cost, Dr. Gallup had a word of encouragement:

"Size of the sample is not important. No poll ever went wrong because of the size of the sample. We have a definite checkup in political straw polls because of the ensuing elections. . . . Polling 900 people is sufficient to guarantee accuracy within five per cent, providing the sample includes the proper proportion of geographic distribution, age groups, income groups, etc. . . . You can guarantee three per cent accuracy with 2500 interviews."

Some predictions of Dr. Gallup based on the latest polls were that business is coming back in favor. . . . The majority of Americans is opposed to Roosevelt's latest spending program. . . . People are in favor of reciprocal tariffs and, among Democrats, Secretary of State Cordell Hull (negotiator of the reciprocal tariffs agreements) is favored as a 1940 presidential nominee . . . among Republicans, Senator Arthur H. Vandenberg of Michigan.

"You'll Have to Like It"

Also touching on reciprocal agreements, Henry M. Busch of Cleveland, professor of sociology at Cleveland College, said:

"If the forces for achieving an increased international trade, of which the Hull agreements are a part, do not win rapid and sweeping success, we may expect the various phases of economic nationalism to be strengthened.

"It is not within my power to suggest how foreign investors should deal with the governments who have sovereignty over their economic operations," Busch continued, referring to the Mexican oil expropriation, "but I am of the opinion that the long-time trend will witness a decreased power of the foreign investor and that he will eventually have to adjust himself to living under the laws and regulations set forth for him by the government in whose country he operates."

Berg, Standard of California, Sees Chance of Profitable '38

N. P. N. News Bureau

LOS ANGELES, Apr. 16.—W. H. Berg, president of Standard Oil Co. of California, in a report to stockholders on 1937 operations said the outlook for 1938 could be viewed favorably if producers on oil in this state continue to recognize the necessity of maintaining an economic balance.

Discussing operations for the greater part of 1937, he said the general rate of crude oil production on the Pacific Cast did not seriously exceed consumptive requirements. Furthermore an increasing demand for products, prevented any appreciable dislocation in prices such as have occurred in previous years. This resulted in a more reasonable return to the industry on its operations.

Consolidated net profits for the company's 1937 operations, after deduction of all charges, amounted to $41,254,777.99, equivalent to $3.15 per share of outstanding capital stock and comparing with $23,310,223.51 for 1936, or $1.78 per share.

President Berg pointed to the discovery and rapid development of a new town-lot oil field in Los Angeles County near Wilmington as a threat to the existing balance between supply and demand.

"Forced to an inefficient peak of production by too rapid development and town-lot operations, this field could undermine the conservation efforts of producers throughout the state, and bring about another period of wasteful overproduction and consequent demoralization," the Standard chief executive said.

He added that the industry has learned such demoralization inevitably brings with it disastrous losses and unemployment which react unfavorably upon the purchasing power and general industrial activity of the entire Pacific Coast. He thought it too early to say whether the Wilmington field would have this result but was encouraged by the fact that early in 1938 many producers in this and in other areas sought to avoid such a result by voluntarily curtailing their production.

Sales volumes of major products marketed by the company exceeded those of the preceding year and total product sales in domestic markets for the year 1937 amounted to $142,373,000, excluding consumer taxes. This compares with $120,018,000 in 1936.

General Increase

The increase was declared due to general increases in demand for refined petroleum products and in part to some expansion of the company's marketing operations.

Total consumption of gasoline within the domestic marketing area increased 6.5 per cent over 1936 and it was reported to stockholders that the company's sales kept pace with this larger market, and its relative competitive position was maintained.

Part of a paragraph was given to operations of The California Company, a subsidiary, in the Rocky Mountain region. It was reported further progress was made in the development of a wholesale marketing position in this area, affording an outlet for refined products obtained from crude oil products obtained from crude production owned by the company in the Medicine Bow and Quealy fields in Wyoming.

On the subject of taxes, the president's report stated total levies, including state sales and motor fuel taxes and Federal gasoline and lubricating oil taxes for the year 1937 amounted to $42,358,294, an increase of $5,563,553, or 15 per cent, over 1936.

Lease Sales Scheduled

N. P. N. News Bureau

WASHINGTON, April 18.—Public auctions of oil and gas leases in Montana and Utah have been announced by the General Land Office, Interior Department.

Sale of leases on approximately 320 acres of public land in North and South Bowes gas field, near Chinook, Mont., will be held at 10 a. m. Friday, May 20, at the Land Office in Great Falls, and similar auction of leases on approximately 760 acres in the Clay Basin gas fields, Daggett county, Utah, will be held at the same hour May 26 at the Salt Lake City Land Office, the announcement said.

Drilling Wells to 30,000 Feet Pictured to Eastern Oil Men

PITTSBURGH, April 16.—Drilling oil wells to depths of 30,000 feet, and average recoveries of motor fuel through refining of 57 per cent of the crude oil run to stills, were visioned for the future of the oil industry, by E. V. O'Rourke, of the faculty of Ohio State University, speaking here April 15 before the annual meeting of the eastern district of the American Petroleum Institute Division of Production.

"During the past ten years, seven billion barrels of oil have been discovered in excess of actual requirements," stated O'Rourke, speaking on the subject, "Will There Be Enough Oil?"

In the past three years, he brought out, newly discovered oil reserves in this country amounted to three billion barrels more than the oil consumed.

"All estimates made on petroleum reserves during the past 15 years have been exceeded by actual production records," he told the 500 who attended the meetings.

Since the first oil well was drilled to a depth of 69 feet, drill holes have continually been making new records, O'Rourke stated. In 1936 one well reached a depth of 12,700 feet and now there is a well in California 2000 feet deeper, he said.

"There are several wells in Louisiana, Texas and California producing oil from 10,000 to 11,000 feet and it is possible that oil may be found at 30,000 feet or at as great a depth as sedimentary rocks exist," he stated.

Drilling in the present fields to formations below known oil horizons often discloses new reserves, he said, pointing out that a great amount of potential petroleum producing land in this country has been only partially tested. In Oklahoma 620,000 acres have been found to yield oil out of 37,000,000 acres and dry holes have proven only part of this large amount of land to be unproductive, he added.

"Sedimentary rocks lie beneath vast areas in states other than the producing ones," O'Rourke said, "and these have not been tested for petroleum by the drill."

Water flooding, air or gas repressuring and vacuum recovery methods will bring about the recovery of at least 20 per cent of the original production from old fields, he said, pointing to the present production of 45,000 barrels a day in Pennsylvania as compared with 23,000 barrels daily in 1924. Nearly all the increase can be attributed to either water flooding in the Bradford area or air-gas repressuring in the fields to the south.

Many permits to install the water flooding system in Oklahoma and Texas have been granted within the past year, he said, and any material increase in the price of crude oil will bring about wide application of this method of oil recovery.

Progress In Refining

In discussing the great advances in the refining art, O'Rourke said that it was estimated that, by 1960, crude oil will yield 57 per cent of its volume to motor fuel. He referred to estimates made by the American Petroleum Institute in 1935 that there will be 37,100,000 motor vehicles in operation in this country and that crude oil requirements to meet the needs of these motor vehicles and other requirements for oil products will be 1,071,020,000 barrels a year a slight decline from preceding years because of advances in refining technique.

Oil mining operations and treating part of the nation's huge coal and shale reserves add tremendous potential reserves of motor fuel, said O'Rourke in conclusion.

Christy Payne Jr., assistant to the president, Peoples Natural Gas Co., Pittsburgh, was elected chairman of the eastern division at the April 15 session of its annual meeting. He takes the place of F. E. Eckert, of Hanley and Bird, Bradford, who was made chairman of the advisory committee.

The following vice chairmen were elected: F. A. Benkert, Pittsburgh, Peoples Natural Gas Co.; T. H. Myers, Pittsburgh, Carnegie Natural Gas Co.; D. T. Ring, Columbus, O., Ohio Fuel Gas Co.; J. J. Schmidt, Cleveland, East Ohio Gas Co., and O. W. Van Petten, Charleston, W. Va.

Gas Exploration Needed

Need for exploration and for new natural gas reserves in the Appalachian Natural Gas Province was dealt upon by E. E. Roth, of the Columbian Engineering Corp., Pittsburgh. "It appears that there is established a definite downward trend in the proven gas reserves from year to year," he stated, "and that, within a period of from 20 to 25 years from the time the estimates were made in 1934, the market requirements, as reflected by annual withdrawals from 1906 to 1934 inclusive, will be difficult if not impossible to meet. There will be gas for several years after this but only in decreasing amounts, from year to year."

E. H. Tollefson, Hope Construction and Refining Co., Clarksburg, W. Va., spoke on the prospects for recovery of oil in West Virginia and Ohio through repressuring operations, stating its use was dependent on the future price of eastern crude oil. A. C. Simmons, Simmons Oil Corp., Bradford, discussed the technique of water flooding in the Bradford field. F. W. Freeborn, Adams Oil & Gas Co., Houston, described producing operations of the past year in the western part of the Illinois Basin.

Agrol Plant To Be Open To Chemurgic Visitors

N. P. N. News Bureau

CLEVELAND, April 18.—A demonstration of the use of farm crops as industrial raw material will be made at the Atchison Agrol Co. plant in Atchison, Kan., Thursday, April 28. Guests and participants in the fourth annual Chemurgic Conference at Omaha, April 25-28, are invited to visit the plant.

Chemurgic conferences were originated to "put chemistry and science to work for the farmer." In advancing the industrial use of farm products, co-operation of agriculture, industry, and science was sought through a joint conference of representatives. The first conference, known as the Dearborn Conference, was held at Dearborn, Mich., in 1935, with Henry Ford as host. All conferences up to this year have been held at Dearborn.

A full-time commercial operating basis for this plant was established in December by the National Farm Chemurgic Council, following two years of research and demonstration under the direction of Leo M. Christensen. William W. Buffum, treasurer of the Council, is president of the company.

Dr. Christensen is to continue the alcohol research program as director of the Chemical Foundation of Kansas Co., a wholly owned subsidiary of the Chemical Foundation, Inc.

The council states that power alcohol blends are now on sale in approximately 2000 service stations in eight midwestern states.

Crude Output Is Up Again In California

N. P. N. News Bureau

LOS ANGELES, April 16.—With total stocks of petroleum and products on the Pacific Coast above the 145,000,000 barrel mark, including more than 19,000,000 barrels of gasoline, and with crude output again straining at voluntary control reins, California producers resumed their position behind the eight ball.

Wells in the Lakeview field of the San Joaquin Valley, which had been shut in for the first 10 days of April under a proration agreement, were put back on production April 11th, boosting the state's output about 20,000 barrels to a total of 727,061 barrels daily. On April 12th it topped 729,000 barrels.

Pleas for adherence to voluntary curtailment quotas effected some reduction by the 13th when all fields in the state reported a total output of 726,251 barrels. Preliminary reports for the 14th indicated a figure of 721,000 barrels.

Despite 18 wells completed in the Wilmington field in the first half of April—six of these were large-scale producers in the Long Beach harbor area, Terminal zone—this field continued to stay below 100,000 barrels daily. Production was 96,281 barrels on April 13.

Curtailment in the field calls for a maximum of 1000 barrels a day for wells in the Long Beach harbor area that have completed the initial flow test. Discussions are under way to reduce this top limit to 800 or even 750 barrels daily.

Wells producing from the prolific Terminal zone around the Ford Motor Co. plant—on the Los Angeles side of the field—were producing 15 per cent of potential and wells in the Ranger zone of this area were curtailed to 20 per cent of potential. The area is underproducing its quota by about 2000 barrels a day.

Additional curtailment in this area will be necessary to absorb production from 17 wells scheduled for completion in Wilmington before May 1. At least nine of these will be large completions—about 5000 barrels initial—in the Long Beach harbor Terminal zone.

New Chemicals Found In Oil A. C. S. Told

(*Continued from Page* 9)

compounds found in California petroleum were discussed by Dr. J. R. Bailey and his colleagues of the University of Texas. Bailey and his staff have isolated a half dozen of the more complicated members of the quinoline family, which include tetramethyl quinoline, a dimethyl-propyl quinoline, and a complex fifteen-carbon nitrogen base from transformer oil residues which is now thought to be trimethylnaphthoquinoline, a so-called trinuclear base.

The complexity of the reactions which may occur between doctor solution, used in sweetening gasoline, and the sulfur compounds, which exist in the sour gasoline, is such that extreme care must be observed in the sweetening operation, Dr. C. D. Lowry of Universal Oil Products Co., said. Excess sulphur so adversely affects the gum inhibitor susceptibility of gasolines sweetening with too large additions of molecular sulfur that care must be observed to obtain good reactions and complete "breaks" of the precipitated lead sulfide, in order to produce a gasoline which is sweet and which does not require excessive amounts of inhibitor, Lowry stated. Addition of too much elementary sulfur probably results in the formation of polysulfides higher than trisulfides which remain in solution in gasoline and retard effectiveness of inhibitors.

"Why sweeten gasoline?", Dr. J. H. Henderson of the Pure Oil Co. asked in discussion following Lowry's paper.

"The objectionable odor of low molecular weight mercaptans was the main factor in inducing refiners to use doctor solutions, but little attention is paid to odor of motor fuel any more," Henderson said. "Cracked fuels have a distinctly unpleasant odor which does not perturb motorists. Caustic washing of motor fuel to remove corrosives and render gasoline non-corrosive is all that many now consider necessary."

Replying, Dr. J. C. Morrell, associate research director of Universal, stated that the question of fuels being sweetened or not being sweetened was a matter for sales departments, not chemical departments, to eliminate from customers' minds.

Lachmann, inventor of the Lachmann zinc chloride treating process, in 1931 published the fact that oxygen, if permitted to be in the treating vessel, affects seriously the sweetening reaction and may oxidize mercaptans completely, Dr. V. W. Rippie, Solvay Sales Corp., stated. A paper soon to be published also points out that butyl mercaptan is oxidized completely in a short time by atmospheric oxygen, requiring that sweetening conditions must be carefully controlled if results are not to be misleading.

Summarizing some of the conditions to observe carefully in sweetening, Lowry stated that sulfur be added, dissolved in sweet gasoline and added to sour gasoline after it and the doctor solution are well mixed, rater than along with the doctor solution. If little sulfur is added, poor settling is the result of mixing all three at once. Lowry showed that if sulfur in a free state is left in gasoline to extent of several hundredths per cent, gum cannot be reduced or inhibited satisfactorily, and the induction period is greatly reduced.

Egloff Speaks

Solvent extraction of diesel fuels may be one of methods for solving problem of high ignition quality fuels for aviation and automotive diesels, Gustav Egloff stated. Solvent extracted diesel fuels show unchanged susceptibility to pour point depressants, he finds. Acid treatment showed little improvement of ignition quality, while hydromenation of low sulfur oils produced fuels of very high ignition quality.

Acidizing oil wells with hydrochloric acid increases the production from wells whose formations are attacked by the acid, L. C. Chamberlain and R. F. Boyer of Dow Chemical Co. pointed out. Various properties of acidizing solutions affect the rate and degree of attack of well casing, rock, and the return of the products with the crude. Troubles have arisen in refining crudes, from acidized wells in the Mid-Continent and in Michigan especially and corrosion of refinery equipment has increased alarmingly. Research is prosecuted intensively by Dow and by various refiners to eliminate or minimize this undesired effect.

(Reviews of all the papers presented before the petroleum division are presented in the Refining Technology edition of this issue of NATIONAL PETROLEUM NEWS.)

CHICAGO, April 18.—The refining division of the Cities Service Oil Co. here is moving today from 919 N. Michigan Ave. to 3200 S. Western Ave.

Oklahoma Refiners Renew Plea For Slash in Insurance Rates

N. P. N. News Bureau

TULSA, April 18.—Formal request to the Oklahoma State Insurance Board for hearing of complaints on fire insurance rates in refineries has been made by a newly-formed committee of Oklahoma refiners headed by Ben P. Piepgrass, Solvex Refineries and member of the Texas committee. Hearing is requested not later than May 15. The refiners contend the rates are excessive.

In a reply to the board's earlier refusal to act, criticism is made of the board's acceptance of a report of findings of the State Inspection Bureau on the ground that the bureau's refusal to file a rate modification came from its superior insurance organization. The letter points out that the State Insurance Board is not subordinate to the bureau and, therefore, its decision must be based upon presentation of facts.

Unfairness of the rates charged for cracking stills which are inspected by an independent technical agency is apparent, the refiners point out, when it is considered that the inspection expense is borne entirely by the refiners, whereas, in the case of steam boilers the insurance companies spend 45 to 55 per cent of premium payments for inspection service.

New and additional evidence to be included in an earlier report to the board accompanied the committee's request for a hearing. One table shows 1936 fire losses on cracking stills covered in 42 policies totalled $26,905 as compared with premium payments more than ten times as great, or $286,046. Total insured value was $21,038,076.

A second table covers the eight-year period from 1929 to 1936 when a total of $314,091 was paid on fire losses on Dubbs stills as compared with premiums of $2,093,311 paid out. Total insurance value was $152,634,837. The ratio of losses paid to premiums collected on independently-inspected cracking units was shown to have been 15 per cent over a period of eight years.

The fight for fair insurance rates on cracking stills started three years ago when several Dubbs licensees urged Universal Oil Products Co. to investigate the effect of independent technical inspection service on fire loss. This was done and U. O. P. presented a complete appeal, based on the data collected, to the Fire Insurance Executives Assn. but with no result.

Refiners have now taken the matter in their own hands. First action was taken by a group of Texas refiners headed by Roy B. Jones of Panhandle Refining Co. (N. P. N. March 16, 1938). The new Oklahoma committee consists of representatives of Bell Oil & Gas Co., Black Gold Refining Co., Cosco Oil Co., Cushing Refining & Gasoline Co., Johnson Oil Refining Co., and Sunray Oil Co.

J. S. Cosden Retires; Successor Is Named

N. P. N. News Bureau

TULSA, April 18.—J. S. Cosden of Ft. Worth, founder of Cosden Petroleum Corp., retired as president of the company on April 13, at the annual meeting of stockholders and was succeeded by Henry Zweifel, Ft. Worth attorney. W. D. Richardson was reelected first vice president.

The new president, a former U. S. district attorney, has operated as an independent producer for several years. He handled many of the legal phases of the reorganization of the former Cosden Oil Co. a year ago, from which the present corporation emerged.

Col. Thompson Seeks Texas Governorship

AUSTIN, Tex., April 16.—In his first public address outlining his position on state questions, Col. Ernest O. Thompson, member of the Railroad Commission and candidate for governor, stressed the need for long-range program of industrial expansion. He asserted that no new taxes are necessary and that such assurance would be an incentive for new industries to come to the state.

Up to now the race for nomination has been considered to be confined to Thompson and Attorney General William McCraw. A new starter is Karl Crowley, former Fort Worth attorney, who resigned as solicitor for the postoffice department. He is supposed to have the blessing of Postmaster General Farley.

Gasoline Stocks Decrease, But Refinery Runs Are Up

N. P. N. News Bureau

CLEVELAND, April 19.—The downward trend of bulk motor fuel stocks continued in the week ended April 16 despite increased refinery crude runs to stills, according to report of the American Petroleum Institute today.

Total U. S. gasoline stocks as estimated by the Institute April 16 stood at 92,001,000 barrels, down 278,000 barrels from April 9, but still more than 10,000,000 barrels above inventories on April 9, 1937, the Institute's report shows.

Crude runs for the country as a whole were increased 37,000 barrels on daily average last week, representing an increase of 1 per cent to 77.5 per cent of capacity in operations at plants reporting to the Institute.

There was a sizeable slash—370,000 barrels—in inventories of gasoline at East Coast plants, and smaller reductions in a number of other districts.

Refinery stocks of finished gasoline were increased 412,000 barrels. Stocks of unfinished gasoline dropped 163,000 barrels, and inventories at bulk terminals and intransit were down 527,000 barrels, effecting a net reduction in the U. S. total of 278,000 barrels.

Outstanding in the curtailment of crude runs was a daily average cut of 41,000 barrels at East Coast plants, and 11,000 barrels at Inland Texas plants. Texas-Gulf runs were jumped 42,000 barrels on daily average, and California runs, 39,000 barrels.

The Institute has segregated light and heavy fuels in its weekly reports of refinery operations and figures for the week ended April 16 bear out the contentions of many observers for some time that the rapid increase in stocks of all fuels the past year has been largely in the residual oils.

Stocks of residual fuels on April 16 totaled 105,313,000 barrels, 27,474,000 barrels above stocks on the some date last year, while inventories of gas oil and distillates, standing at 20,633,000 barrels on April 16, were only 3,821,000 barrels above inventories on the same date in 1937.

Stocks of gas oil and distillates in the Texas-Gulf district were down 249,000 barrels last week, and for the country as a whole inventories were off 104,000 barrels. Residual fuel stocks increased 860,000 barrels, with California inventories alone jumping 808,000 barrels.

Imperial Oil Takes 26,800 Bbls. Daily From Turner Valley

TORONTO—Holdings of Imperial Oil, Ltd., in the newly-developed Turner Valley field in Alberta were disclosed in the annual report of that company by G. Harrison Smith, president, who stated the company and its affiliates controlled or had a participating interest in 98 oil and gas wells in Western Canada, 92 of which were in Turner Valley.

Turner Valley crude production, he said, increased from a potential of 5000 barrels per day in midsummer, 1937, to 26,800 barrels by the end of the year.

Of the total production of 2,767,221 barrels of the field in 1937, Imperial Oil affiliates produced 1,244,338 barrels, which was 585,780 barrels higher than in 1936. The company, which is a subsidiary of Standard Oil Co. of New Jersey, also purchased 495,079 barrels from independent producers.

This rapid increase brought difficulties in handling it. In 1937 the Royalite Oil Co., pipe line from Turner Valley to Calgary was increased from 5000 barrels daily capacity to 10,000 barrels, then to 13,800 barrels. Its capacity is now being increased to 24,000 barrels per day.

This added facility, linked with freight rate reductions from Calgary to Regina, has made it possible for both Calgary and Regina refineries to use Turner Valley crude exclusively. Besides, the marketing territory has been widened to include part of Manitoba.

The Turner Valley field now supplies practically the entire Prairie province market with all products that can be made from Turner Valley crude oil.

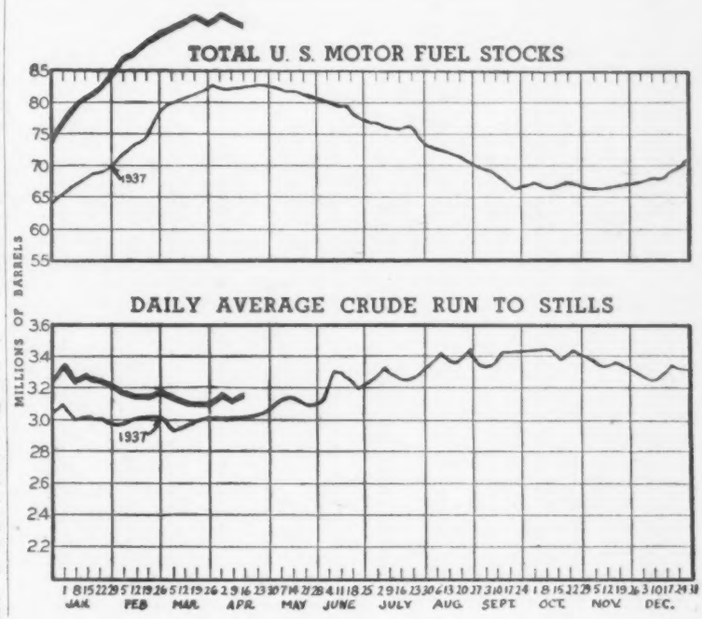
Smith, said that an increase in the consumption of petroleum products in Canada during the year was experienced by the company, but profit margins were lower and taxation was extremely heavy.

Daily Average Production Important Districts, American Petroleum Institute Figures

	Week Ended April 16 Barrels	April 9 Barrels
Oklahoma City	118,200	137,300
Total Okla.	497,700	518,000
East Texas	431,350	430,600
Total Texas	1,334,150	1,323,350
Rodessa	42,050	41,700
Total La.	263,350	260,200
California	720,700	714,400
E. of Rockies	2,664,700	2,677,950
Total U. S.	3,385,400	3,392,350
Crude Imports	52,280	72,570
Total New Supply	3,437,680	3,464,920

TULSA, April 19.—Barnsdall Oil Co. today announced that, effective April 21, its purchases of crude in Osage and Tulsa counties will be reduced to 75 per cent of the average amount of oil purchased from each lease during March.

Action was made necessary by reduced requirements of Barnsdall Refining Corp.'s Barnsdall (Okla.) plant, the announcement said.



CURRENT REFINERY OPERATIONS

Districts	Per Cent Capacity Reporting	Daily Average Crude to Stills (Barrels) Week Ended		Per Cent of Reporting Capacity Operated Week Ended		Stocks (Thousands of Barrels) Total Finished and Unfinished Motor Fuel* Week Ended		Stocks of Gas and Fuel Oil Gas Oil and Distillates Week Ended		Residual Fuel Oil Week Ended		Total Week Ended	
		April 16	April 9	April 16	April 9	April 16	April 9	April 16	April 9	April 16	April 9	April 16	April 9
East Coast	100.0	475,000	516,000	71.0	77.1	23,030	23,400	2,994	3,061	6,621	6,554	9,615	9,615
Appalachian	88.4	100,000	99,000	77.5	76.7	3,381	3,464	430	389	915	936	1,315	1,295
Ind., Ill., Ky.	92.4	394,000	396,000	80.6	81.0	15,404	15,278	2,141	2,187	5,095	5,074	7,236	7,261
Okla., Kans., Mo.	84.7	267,000	265,000	79.7	69.2	8,059	7,804	900	884	2,607	2,578	3,507	3,462
Inland Texas	56.6	123,000	134,000	61.2	66.7	2,716	2,777	364	331	1,206	1,311	1,570	1,642
Texas Gulf	95.7	752,000	710,000	94.4	89.1	13,198	13,276	2,320	2,569	5,836	5,864	8,156	8,433
La. Gulf	96.6	124,000	123,000	73.8	73.2	2,560	2,609	1,347	1,287	1,798	1,782	3,145	3,069
No. La., Ark.	63.7	46,000	45,000	79.3	77.6	488	532	140	130	426	406	566	536
Rocky Mt.	69.7	38,000	33,000	61.3	53.2	2,252	2,265	128	131	666	663	794	794
California	90.9	550,000	511,000	73.7	68.5	15,953	15,914	9,399	9,268	78,093	77,285	87,492	85,553
Total Reporting	89.0	2,869,000	2,832,000	77.5	76.5	87,041	87,319	20,133	20,237	103,263	102,423	123,396	122,669
Estimated U. S. Total (Bur. of Mines Basis)		3,150,000	3,110,000			92,001	92,279	20,633	20,737	105,313	104,453	125,946	125,190

*Includes stocks at refineries, in bulk terminals, pipe lines and in transit.

Divorcement Bill To Be Opposed By Ohio Jobbers

(*Continued from page* 9)

sentatives may be present and ask for time.

The subcommittee before which the hearings are being held is headed by Sen. Pat McCarran, Nev., and its members are Senators Borah, Idaho, and Van Nuys, Ind.

Hadlick, at the request of the subcommittee, is preparing a brief in support of the constitutionality of the Biermann measure which will be presented at the hearing. It is understood it will refer to the decision of the Supreme Court divorcing the meat packers from retailing of meats, as one of its sources.

On the House side of the Capitol the indecision as to when hearings will be held on the measure continues. About two weeks ago Chairman Lea of the House Interstate Commerce Committee, to which the bill had been referred, wrote Hadlick telling him it had been turned over to the Cole "oil subcommittee" of his committee for hearing.

Rep. Cole, Md., whose subcommittee investigated the petroleum industry in 1934 for Congress, has been ill for some time, and in his absence, Lea designated Rep. Samuel B. Pettengill, Ind., as acting chairman of the subcommittee.

However, at Pettengill's office it has been reported for the past several days that no action has been taken looking to setting a date for the hearings, pending the return of Cole, or at least consultation with him by Rep. Pettengill. Cole is due back in the city sometime this week, it was said at his office today.

West Virginia Meeting Lists More Speakers

PARKERSBURG, W. Va., April 18. — The West Virginia Petroleum Assn. will hold its pioneer convention at the Daniel Boone Hotel, Charleston, Edwin F. Patrick of Parkersburg, secretary, has announced.

The association will pattern after other association meetings and modestly refrain from blazing any new trails in arranging its first program, Patrick indicated.

Highlight of the program will be an address by Baird H. Markham of New York, director of the American Petroleum Industries Committee, who will speak on "Our Problem of Tax Freedom."

The "Highway Planning Survey" will be the subject of a talk by Burr H. Simpson, successor of Daniel Boone as state road commissioner. Maurice Hanning, Cleveland oil attorney, and J. C. King, of Charleston, Standard Oil Co. of New Jersey, will speak on "Every Man a Minute Man."

Two Companies Join To Build New Plant

TULSA, April 18. — The new natural gasoline plant now under construction in the K. M. A. pool near Wichita Falls, Tex., will cost approximately $500,000, C. H. Wright of Tulsa, president of the Sunray Oil Co., announced today.

The plant is being built jointly by Sunray and the Phillips Petroleum Co.

Sunray and Phillips now control approximately 4000 acres of casinghead gas contracts in the K. M. A. pool.

Ohio Standard Cuts Toledo 'Gas' Prices

N. P. N. News Bureau

CLEVELAND, April 19.— Standard Oil Co. of Ohio, effective April 20, will reduce its posted tank wagon prices of all grades of motor gasoline 1 to 1.5 cents, service station prices 2 cents, at Toledo, which, in effect reduces prices for regular gasoline to undivided accounts from 3.5 cents to 2.5 cents below service station prices at stations operated by the company in Toledo.

Toledo is the scene of a price war for which dealers are blaming certain tire companies handling major company gasolines.

Standard's reduction will extend throughout Lucas county (Toledo), and also include the city of Perrysburg and Ross township in Wood county.

The tank wagon price of third grade gasoline to consumers will be reduced 1.5 cents; all other tank wagon prices, 1 cent; and service station prices of all grades, 2 cents.

Standard's new prices in the above mentioned areas, including 5 cents taxes, April 20 will be:

	Regular	Third Grade
Consumer tank wagon	15.5c	14.5c
Tank wagon to undivided accounts	14.0	13.5
Tank wagon to divided accounts	14.5	14.0
Service station	16.5	15.0

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CIO Beats AFL For Texas Co. Sailors

By Teletype
N. P. N. News Bureau

WASHINGTON, April 19.— National Labor Relations Board today announced certification of the National Maritime Union, C.I.O. affiliate, as the exclusive collective bargaining representative of unlicensed personnel on vessels operated out of Atlantic and Gulf ports by The Texas Co.

Action was based, the board said, on results of a recent secret ballot election which gave the N.M.U. 431 votes, compared with 54 for the International Seamen's Union, A. F. of L. affiliate, and 149 for neither organization.

Humorous (?) Technology

By ARCH L. FOSTER, Technical Editor

"Ta see oursels as ithers see us", the gift prayed for by the immortal and tempestuous Robert Burns, is doubtless the most useful faculty which man can develop. Queer habits are not corrected until seen; we find it always difficult to study our own efforts with impartial minds. The engineer and the chemist are no less prone to errors and absurdities than the remainder of the human race. Possibly the reason we do not see or admit our own ludicrousnesses is that none ever wish to see themselves in a position which invokes hilarious reactions from observers.

To help in deflating egotism we have our Gridiron dinners with lampooning of the nation's highest officials, and similar iconoclastic activities the country over. In his writings the engineer falls into habits of repetition, of presenting any mass of data according to a set pattern; it seems unavoidable, we fall into a rut.

Careful study of the technical literature on cracking by a graduate chemical engineering student induced him to write a burlesque on the typical report an engineer often makes in the literature on advances in refining technology. Boiled down to its lowest common denominator, it pokes fun at the alleged sales talk which creeps into supposedly highly technical articles, at the stereotyped manner of reducing live data to a state which seems dead and uninteresting to the casual reader. As this contribution to technology (?) we offer:

The Modern Crackpot Process

By H. M. Eggnogg and Otto B. Schacht

The Unitarian Salad Oil Co., Addis Ababa

Recent developments in crackpot art have been ably reviewed by Kaschouski and Doublebarrelovich[1], Isschkii and Bimmm[2], Thomm, Dichk and Harri[3], Dun and Bradstreet[4], and Groucho, Zeppo and Harpo[5]. The former say, in conclusion, "Were it not for the Buggs-Gross process the industry would now be in the same condition in which it found itself when Columbus returned from his second voyage."

Hellfeier and Damnation[6] report the following yields from cracking a Russian type mineral oil in a multiple coil, twelve tube, selective Buggs-Gross unit with hydraulic brakes and all-steel body by Fischer:

Good Guelph Gasoline	32.47%
Virgin olive oil	23.74%
Gambel's soup	27.43%
Gas, Coke, loss, etc.	34.72%

This run continued for 129 days, 4 hours and 27 minutes, Central Standard Time, and was concluded only to permit the replanting of some shrubbery around the control house which was destroyed when the reaction chamber exploded.

1. Azer. Neft. Khoz., I, 1, (1), 1.
2. Khoz. Azer. Neft., II, 2, (2), 2.
3. Khoz. Azer. Neft., III, 3, (3), 3.
4. The Ladies Home Journal, 47, 243 (1492).
5. Esquire, 143, 1492 (1936).
6. Oele, Fette, Kartoffeln u. Sauerbraten, XXVI, No. 13, 5, (1907).

Refining Technology

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Oiliness in Its Relation to Viscosity in Lubricants ...by A. W. Burwell and J. A. Camelford .. R-179

Investigation of oiliness and of oil-metal attraction by the use of metal powders in oils shows some interesting facts. Characteristics of the actual lubricating film depend on the mutual attraction of the oil for the metal surface.

Continuous Deasphalting, Deresining, Dewaxing, by Sun-Alco Propane Process ... by M. B. Cooke, Earl Petty, and Paul Barton R-186

Continuous deasphalting, deresining, and dewaxing with propane with indirect refrigeration followed by self-refrigeration to filter temperature cuts installation, operating costs; high pressures only on tubular equipment, low pressures on tanks, and all large vessels; small amount of oil in system at any time.

Filtering with Bauxite Produces Economies in Lube Processing R-195

Processing advantages to bauxite filtering of lubricating oil are high yield, increased plant capacity, high quality product, and ability to be re-burned and re-used without continuing to lose decolorizing efficiency.

"State of the Art" as Seen in the World's Current Technical Literature R-198

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Prominent Figures at the Western Petroleum Refiners Association Meet

Hot Springs, Ark., April 25-27, 1938

C. M. Boggs, Kanotex Refining Co., Arkansas City, Kan., president of Western Petroleum Refiners Association

Dr. E. R. Smoley, The Lummus Co., New York, who presents an important subject, "The Economics of Combination Cracking vs. Separate Topping and Cracking"

Frank Praeger, Alcorn Combustion Co., Philadelphia, will present a paper on the modernized "True Vapor Phase Process" of cracking

Glenn Griswold, vice-president, McGraw-Hill Publishing Co., who will present a national picture of "Business-Government-Pub'ic; Relations, Objectives, Responsibilities"

L. D. Betz, of W. H. & L. D. Betz, Inc., Philadelphia, who will discuss "Water Treating"

W. W. Scheumann, refining engineer Empire Oil & Refining Co., Tulsa, who presents the results of "Pawhuska Road Tests For Vapor Lock, Octane and Fuel Losses"

Oiliness In Its Relation To Viscosity in Lubricants

By A. W. BURWELL* and J. A. CAMELFORD*

ABSTRACT

In lubrication, adsorbed or oiliness films may be of any density or physical condition—solid viscous or extremely fluid. The actual composition of the lubricating film is not identical with the composition of the oil mass. Metallic powders are shown to absorb the more polar, or "oily" materials from a compounded oil, indicating that this selectivity may be expected when oil is in contact with bearing metals. Lead and copper show the highest selectivity. Valuable information can be gained, the authors believe, from a study of the pressure-temperature-viscosity relations along with metals usually found in bearings.

DURING the past two years, a sub-committee of the Society of Automotive Engineers has been working to correlate available data on oiliness, and to develop a research program in participating investigation into existing definitions of "oiliness", and submission of a definition of the property as a basis for the work of the committee. The definition adopted reads as follows:

> "Oiliness is a term signifying differences in friction greater than can be accounted for on the basis of viscosity when comparing different lubricants under identical test conditions."

Ths definition is sufficiently broad to serve for interpretation of many experimental data obtained in researches on thin film lubrication. It will be noted that phenomena of wear—by abrasion or by corrosion—temperature differences, and other modifying influences are omitted from this concept. The stipulation as to identical test conditions should be noted, as it restricts the investigator to data derived only from accurate observations obtained under conditions of rigid laboratory control.

The study of oiliness therefore is confined to comparison of coefficients of friction, kinetic or static, where control can be exercised over every factor involved in the determination of these values.

In this manner, the coefficient of kinetic friction may be plotted as a function of the variables, temperature, speed, pressure, without regard to any of the physical or chemical properties of the lubricant.

In previous papers, (1), the authors have described the apparatus used in their laboratory for making determinations of coefficients of kinetic friction, and have given their interpretation of results obtained experimentally.

These may be recapitulated briefly here:

(1) Transition from full fluid film to adsorbed or oiliness film lubrication normally is gradual. Very rarely is it abrupt or sharply defined.

Specific instances do occur where this broad conclusion does not hold true, for example, where a highly refined oil, such as a turbine oil or white oil has been compounded with an aditive to increase film strength or oiliness. Another notable instance is where Diesel fuel oils are "doped" to insure adequate lubrication and protection of injection pumps.

(2) Adsorbed or oiliness films may be of any density or physical condition—solid, viscous, or extremely fluid. There are several well known cases where additives may impart to a lubricant the ability to maintain a complete film between the moving parts of a bearing system, but yet the film is of such character that a relatively great amount

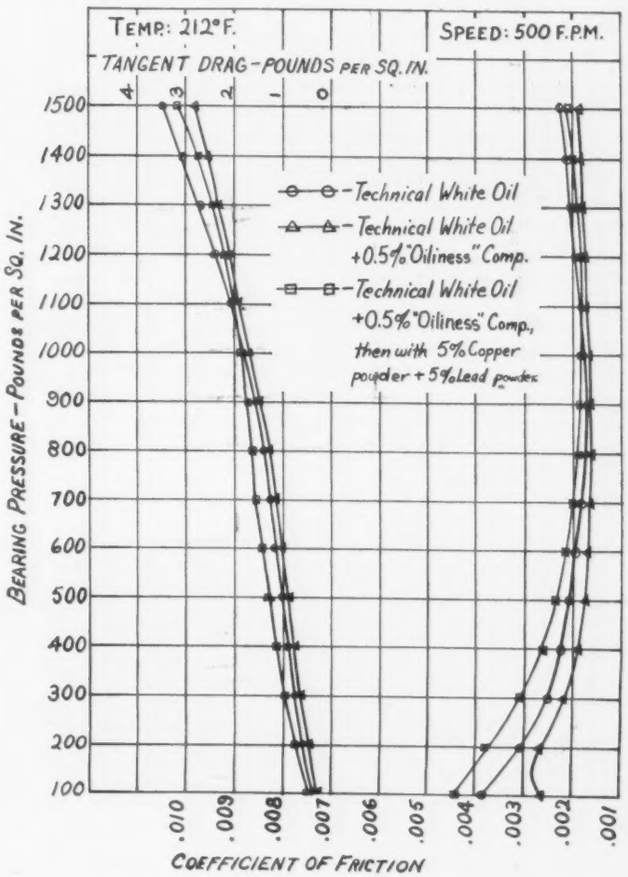

Fig. 1. Pressure-coefficient of friction curves of (1) a technical white oil; (2) the same oil treated with 0.5 per cent of an "oiliness" additive—ester of saturated fatty acid; and (3) the same compounded white oil after treatment with 5 per cent each of copper and of lead powder

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of power is necessary to overcome the resistance of the film, and very high values for coefficients of kinetic friction are obtained in such cases.

(3) Whether or not a bearing is operating under conditions of full fluid film lubrication, no evidence can be adduced to justify the assumption that the viscosity of the lubricating film is identical with the pressure-viscosity of the lubricant as a whole.

Many attempts have been made to maintain the relationship between coefficients of kinetic friction and $\frac{ZN}{P}$ beyond the limits of its usefulness. The mechanism of these films is not understood clearly and attempts to pursue the laws of hydrodynamics beyond the limits laid down by Sommerfeld and subsequent workers in this field have frequently proven disastrous.

(4) A lubricant can function in three distinct regions without permitting complete breakdown:

(a) Full fluid film, in which increase in temperature will cause lowering of values for coefficients of kinetic friction, unit pressure being constant, and in which increase in pressure also causes lowering of the values for coefficients of kinetic friction when the temperature remains constant.

(b) Adsorbed film or "oiliness" region, in which the action of the oiliness constituents of the lubricant is not predictable from ordinary physical examination of the lubricant.

(c) A region of partion lubrication, in which the lubricating film is repeatedly ruptured and reformed, and metal-to-metal contact occurs without necessarily causing bearing seizure.

In this region, however, abrasion necessarily occurs, resulting in eventual destruction of the bearing surfaces.

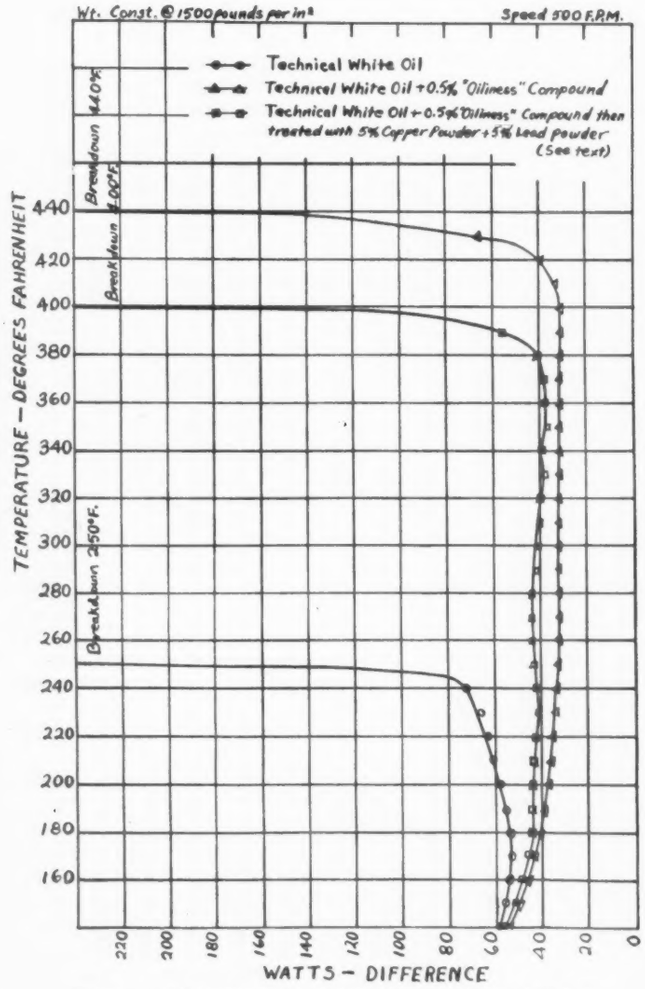


Fig. 2. Breakdown curves on the three oils shown in Fig. 1

Selective Segregation of Oiliness Constituents by Finely Divided Metal Powders

Friction experiments have demonstrated conclusively that thin film lubrication is dependent, for effective functioning, upon the presence in the lubricants of some constituent or constituents which cause continuous and complete separation of the metal surfaces in the bearing system.

In order to obtain a more complete picture of the effect of highly polar bodies on the action of lubricating oils, and of the effect of finely divided metal on an oil treated with such substances, a series of experiments was made, using an oil, which of itself possessed no particular virtues as a lubricant. In the authors' experience, however, it is impossible to obtain a viscous petroleum fraction, no matter how drastically refined or treated, which is entirely devoid of oiliness. The oil used in these experiments was a technical white oil of 130 S.U.V. at 100° F. Determination of the friction characteristics of the films made from this oil was made on the modified Moore-Carvin machine previously described.

A quantity of the same oil was then treated with a compound available commercially for the purpose of enhancing oiliness. The behavior of the compounded oil was then observed under test conditions identical with those of the untreated oil. Portions of 500 grams of the compounded oil were taken and each treated with 50 grams of a fine metallic powder. The metals used were lead, copper, iron-by-hydrogen, and zinc. An additional test was made with a mixture of copper and lead together. The treatment consisted in introducing the metal into the oil at a temperature of 140° F., stirring the metal-oil mixture mechanically for one hour, at that temperature, and immediately filtering. A sample of the filtered oil was retained for chemical analysis; the remainder was submitted to friction tests as before.

Analytical data were obtained on all samples. It was known that the additive used was an ester of saturated fatty acids of high molecular weight produced synthetically. Determination of saponification value (Table 1) therefore, gave a ready index of what had occurred chemically in the process of intimate contact between metal powder and the lubricant.

TABLE 1

Saponification Values of the Extracts

Sample	Saponification value, mg. KOH per gram
Technical white oil (A)	1.96
Technical white oil + compound (B)	10.94
Sample B after treatment with Pb powder	0.56
Sample B after treatment with Cu powder	0.28
Sample B after treatment with Fe powder	1.68
Sample B after treatment with Zn powder	2.24
Sample B after treatment with Cu and Pb powder	0.73

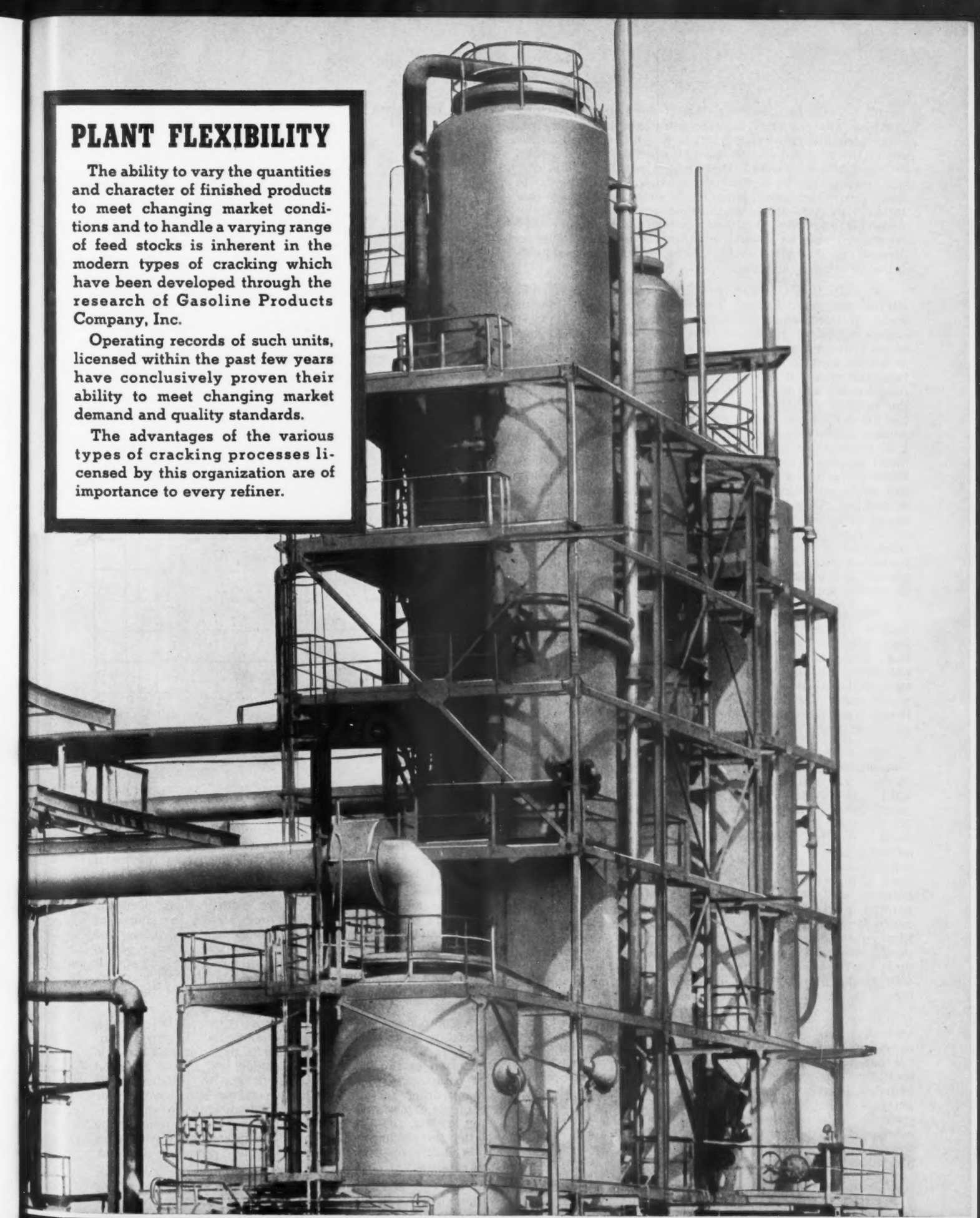
After the oils had been filtered, the residual metal powder was extracted with benzol, and then with carbon-tetrachloride. The benzol did not remove all of the material which was attached to the metal powder, and carbon tetrachloride therefore was used for several reasons. It is an excellent solvent, like all the halogen substituted aliphatic hydrocarbons, and is volatile. It is also believed that it has a greater attraction to the metal and should therefore, replace ordinary polar bodies. Saponification values of the extracts were obtained (Table 2).

TABLE 2

Saponification Values of the Extracts

Extract	Saponification value, mg. KOH per gram
Extract from Pb powder	1.21
Extract from Cu powder	5.73
Extract from Fe powder	1.16
Extract from Zn powder	1.10
Extract from Cu and Pb powder	3.24

These analyses demonstrated that intimate contact between the lubricant and the metal particles, even in the absence of pressure or other extreme physical forces, leads to the segregation of some active constituents of the lubricant at the metal surfaces. This, of course, does not mean necessarily that the attraction of these polar bodies to the metal surface gives rise to adequate film formation and protection under the conditions which



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would be met in a bearing. But it does show that in a complex mixture such as any petroleum lubricating oil, some constituents of that mixture will be attracted to the metal under given conditions, not necesarily very severe. It must be remembered, that though petroleum oils consist principally of hydrocarbons, there are present in small quantities small amounts of other substances containing oxygen, sulphur, nitrogen and other naturally occurring elements. These compounds, although they may be present only in minute quantities, exert modifying influences on the film-forming characteristics of the lubricants in which they occur.

Examination of the pressure-coefficient of friction curves (Fig. 1) of oils which had been treated with metal powder, showed that in every instance, in the higher range of pressures, the value of the coefficient of friction with the compounded oil which had been subjected to contact with the metallic powder were higher than the value of the coefficient of friction of the compounded oil, and were lower than the values obtained for the original samples of white oil. In these portions of the curves which represented pressures lower than 800 pounds per square inch, in several cases (of which Fig. 1 is an example), the oils which had been treated with metal powders gave values for the coefficient of friction which were higher than those obtained from the unmodified white oil. These results are not attributable to error in making the determinations, nor do they constitute an anomaly. It has already been pointed out that the white oil was not completely devoid of any oiliness characteristics and it is conceivable that the lubricant originally contained some substances which were preferentially attracted to the metal surfaces upon exposure to the metal in powder form.

The authors' laboratory has made numerous examinations of the chemical characteristics of many petroleum oils. In every case it has found acid esters, alcohols, principally secondary and tertiary, alcohol-ketones, and ketones in the oil. In some cases free carboxylic acids were found to be present in measurable amounts. In some paraffin stocks which showed admirable lubricating ability these oxygen-containing compounds were present to the extent of from 10% to 15%.

On working out the temperature-coefficient of friction characteristics of the oils, the original white oil showed an ordinary temperature-viscosity relationship until a temperature of 170° F. was attained. Beyond this point, gradual increase in the value of the coefficient of friction points to early film rupture and bearing seizure at a temperature of only 250° F. When the same oil was treated with the oiliness compound, steady lowering of the value of the coefficient of friction was noted until a temperature of 250° F. was attained; from this point to 400° F. the curve is practically a straight line, parallel to the temperature axis. This portion of the curve is definitely in the region of thin-film or adsorbed-film lubrication, and no pressure-temperature-viscosity modifications of the lubricating film exert any influence upon the friction characteristics of the lubricant. Beyond 400° F. the film begins to disrupt with accompanying increase in friction and bearing seizure occurs at 400° F.

After the compounded oil has been treated with the various metallic powders, the curves (of which Fig. 2 is representative) show very distinct modifications in the behavior of the oil. In every case the value of the coefficient of friction is higher than that of the compounded oil and seizure of the bearing took place at temperatures varying between 370° and 410° F. Broadly speaking, a measurable deterioration in the friction characteristics of the oil occurred in every instance where the oil had been brought into intimate contact with finerly divided metal particles before the friction tests were made.

These experiments would indicate that there exists a selective segregation of polar bodies upon metal surfaces which exerts a very pronounced influence upon the behavior of lubricating films. This influence depends upon such factors as the material comprising the bearing surfaces, and the type and quantity of active substances present in the lubricant. The term "active" does not imply chemical reactivity, but the presence of polar groups which are attracted to the surfaces. Whether the segregation takes the form of a selective adsorption (A.S.M.E. Report 1919; Langmuir 1934), or an orientation of certain of the molecules of the lubricant attracted to the metal surfaces is not definitely decided (Trillat 1928; Clark, Lincoln and Sterrett, 1935).

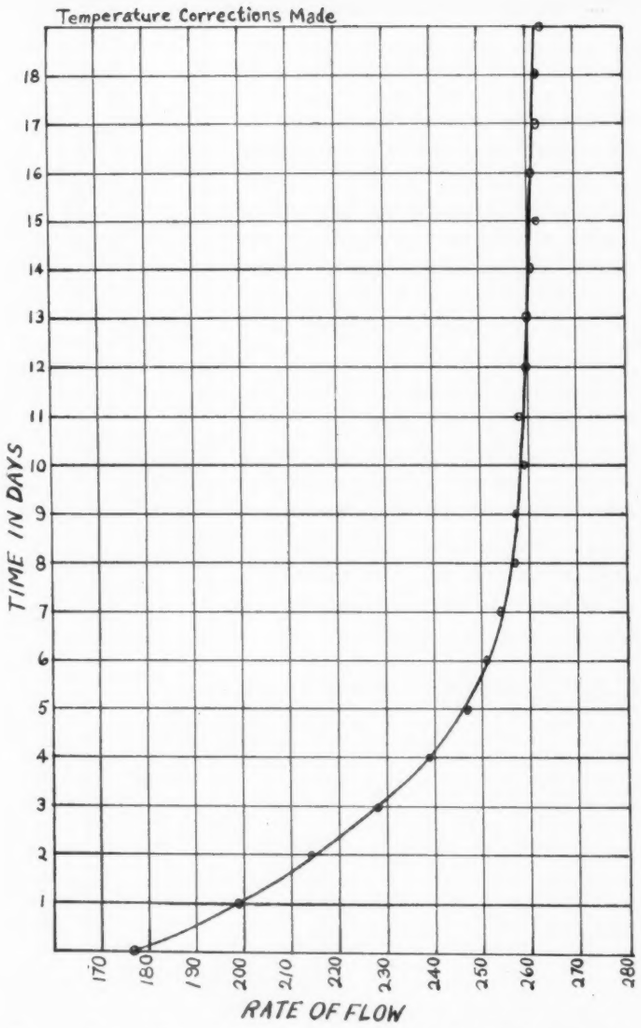

Fig. 3. Rate of flow of an "oily" lubricant through packed copper wire

The authors feel that more evidence has been adduced in favor of the latter hypothesis. In the course of examination of numerous substances proposed for the purpose of increasing the oiliness characteristics of lubricating oils, or of increasing their film strength, it has been found that the degree of efficiency was frequently in proportion to the polar strength of the molecule.

Compounds with unattached or residual valences invariably exhibit a strong attraction for the metal surfaces in a bearing. This property is by no means the sole criterion of the value of these additives. In the selection of compounds suitable for blending with petroleum oils many other factors have to be taken into account, for example, chemical stability exhibited both to the bearing metals and to the lubricant. In consideration of the latter the products of oxidation occurring in the petroleum oils under conditions of severe service cannot be ignored.

When considering the broad applications of oiliness in test or journal bearings the additional property of film strength is so closely associated with oiliness phenomena that the conclusion is inevitable that in certain phases of lubrication, film strength is synonymous with oiliness. For example, an asphaltic neutral oil is totally incapable of lubricating a test bearing operating at pres-

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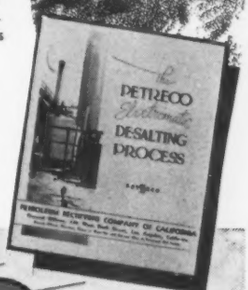
* It is definitely known that salts in charging stocks may cause corrosion; deposits and scaling in fractionating and condensing equipment; coke deposition in cracking equipment; and deleterious effects on refined and residual products.



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sures above 1000 lb. per sq. in. and temperatures exceeding 300° F. If, however, a small percentage of some halogenated compound is added to this neutral oil, the bearing functions efficiently at pressures well exceeding the limit given above and at temperatures which induce thermal decomposition of the hydrocarbon medium. In this instance it is obvious that the value of the coefficient of kinetic friction for the neutral oil is a maximum. With the oil that has been treated, the value of the coefficient of kinetic friction in all probability will not exceed 0.010. To conclude this argument summarily, every possible range of pressures, temperatures, and other controlling factors should be explored thoroughly before logical conclusions can be presented confidently.

The Effect of Segregation on Small Metal Capillaries

Further proof of the strong attraction of some constituents of lubricating oil towards metal surfaces is given by an experiment designed to determine the time required to clog small metal capillaries or the time required to attain a static rate of flow. The work was suggested by experiments conducted by Wilson and Barnard (1922).

The apparatus used in the experiments consists of a glass tube tightly packed with strands of copper wire of a uniform thickness of 0.0151 inch and cut to uniform length. Oil was supplied at a constant head, and readings were taken (at 24-hour intervals) of the time required for 10 c.c. of oil to pass through the mass of wire. Room temperature was noted and the customary corrections for the temperature-viscosity relationship were applied. As might be expected, rate of change of flow was rapid for the first five days, subsequently diminishing until at the expiration of about 15 days the rate of flow remained fairly uniform (Fig. 3). The oil used in thish test was identical with that used in the previous tests. As the oil passed through between the columns of copper wire the polar constituents of the oil were attracted to the metal surface. This process continued until the metal surface exposed was covered with a continuous, uniform layer of polar bodies. When this had occurred the rate of deposition necessarily slowed down.

Since the segregation could no longer occur directly upon the metal surface but had to build up as a secondary layer on the molecules previously deposited, the attraction due to the polar forces was to some extent inhibited. This process continued, but only until a sufficient thickness of these polar bodies had been deposited on and around the metal to insulate the metal completely from further polar attraction. It was then obvious that the rate of flow would continue at a uniform rate.

Segregation on metal surfaces occurs independently of conditions of high temperature or pressure, but while this attraction exists in materials showing oiliness it does not follow that all substances which exhibit this property of attaching themselves to metal surfaces will increase the oiliness of a lubricant.

Conclusions

To express the results of these experiments very briefly, it can be said that when a lubricant is at work in any system, regardless of any factors which determine its efficiency, the actual composition of the film is not identical with the composition of the oil mass. In other words, the characteristics of the lubricating film are determined by the relative attraction for the metals comprising the bearing of each component of the mixture comprising the lubricant. This is true whether extraneous material has been added to the lubricant or not.

Differences in coefficients of kinetic friction have been noted in many oils possessing the same general physical characteristics but of different origins. Similarly, variations in refining practice cause wide differences in the friction properties of lubricants which may have been derived from the same source. These differences are usually observed over the entire range of pressures and temperatures used. In some cases these variations in frictional qualities of films are of great importance, even in the region of full fluid film lubrication. Observations have been made in the authors' laboratories of several instances where high-viscosity lubricants, specifically airplane engine oils, produced such high coefficients of kinetic friction in the range of full fluid-film lubrication, that the internal friction of the films produced a gradual shearing-off of the bearing faces, resulting in bearing failure, and necessitating lengthy reconditioning of the test bearing. When tests were made on these same oils with identical bearing surfaces but under greatly increased pressures and, particularly, temperatures, very low coefficients of friction were obtained.

It may be argued that this represents the results predictable from consideration of the type of formula $f = \phi (ZN/P)$. When it is considered that many lubricants of comparable viscosity characteristics give very much lower coefficients of kinetic friction under identical conditions of test, it is clear that to define Z as the viscosity of the lubricant at the operating temperature is completely erroneous. Long ago when Hersey (1914) first suggested the dimensional notation leading to this equation the quantity Z was expressed as *the effective viscosity in the film.* This places an entirely different construction upon the equation, and is much more nearly in accord with experimental results obtained in the region of full fluid film lubrication.

The primary effectiveness of any lubricant lies in its ability, under conditions to which it is exposed in service, to maintain at all times complete separation of the metal surfaces between which it is interposed. But, in selecting lubricants for particular uses, many other considerations certainly have to be entered into. Unit pressures are high, temperatures exist which in some cases exceed the cracking temperatures of the oil used, clearances in many cases are extremely small, and frequently bearings are designed which do not permit of lubrication by purely hydrodynamic means. With conditions like these becoming more prevalent, it is imperative that the study of thin-film lubrication be steadily pursued, that eventually a complete mathematical formulation may be accomplished which will continue on as firm a foundation as the classical hydrodynamic consideration of Beauchamp Tower (1883) and Osborne Reynolds (1886).

The authors believe that valuable information, which could be translated into rational fundamental dimensional terms, would be gained from detailed experimental investigation of pressure-temperature-viscosity relations together with a study of the forces of attraction between bodies possessing known lubricating ability and the metals which commonly comprise bearing materials. Investigators are at present working upon each of the two subjects outlined, and though much of the projected research will be empirical, with a strictly utilitarian purpose of developing lubricants more suitable for the progressively more arduous demands made upon them by recent mechanical trends, this is not necessarily to be deplored. With the production of these lubricants will come a vast amount of service and physical data which will be of definite value in developing hypothetical considerations into soundly logical theory expressible in mathematical terms.

* * *

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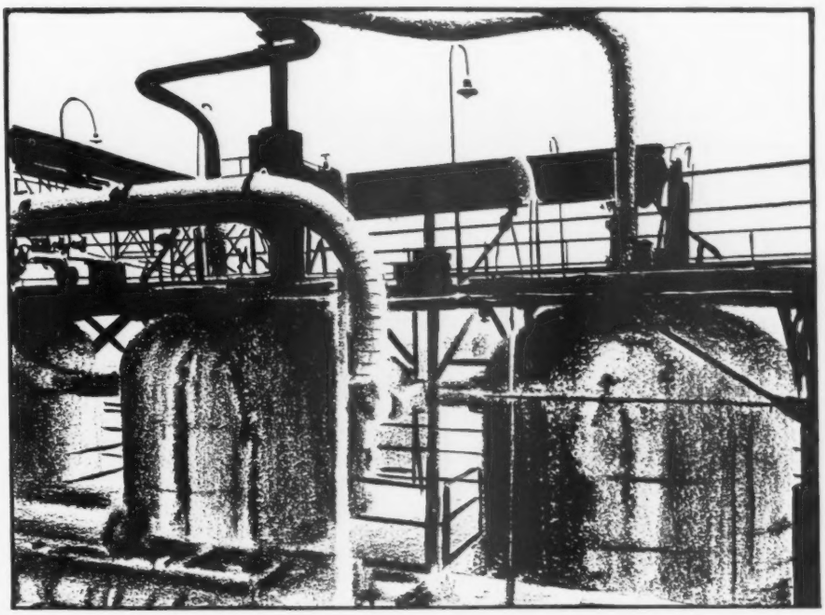

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By M. B. COOKE*, EARL PETTY*, and PAUL BARTON**

Presented before National Petroleum Association, Cleveland, Ohio, April 13, under the title, "Propane Treatment of Lubricating Oil Stocks".

ABSTRACT

Of the refrigeration for propane refining, 90% is supplied by indirect means using a 1:1 propane-oil ratio, the remaining 10% being obtained by self-refrigeration. Controlling the propane-oil ratio during chilling results in great speed both in chilling and filtering.

On Mid-Continent stocks topped residuum is treated; on Pennsylvania stocks a wax distillate and a steam refined cylinder stock are treated in parallel. Pennsylvania wax distillate of 100 S.U.V. seconds at 100° F. is chilled in double-pipe chillers with 10-20% propane, diluted then to 80% propane which is cooled to minus 45° F. asphalt reported to act as filter aid to give high filter rates.

THE TREATMENT of petroleum and its intermediate products for the purpose of obtaining a useful article of commerce is a very old subject but one which continually is the target for technologists. The amount of interest in treating petroleum fractions is exemplified by the voluminous patent literature as well as books devoted to the subject. This is indeed a healthy condition for where there is dissatisfaction there is at least the hope that something constructive will result.

It is unnecessary to go over the developments of distillation and lubricating oil manufacture by conventional methods in view of the many excellent sources of these data. It may be opportune, however, to look back a few years for the inspiration of the work and processes which is the subject of our immediate interest, i.e., propane treatment of lubricating oil stocks. A survey of the literature reveals some rather interesting work on the subject of solvents and their effects upon mineral oils. In 1867, less than ten years after Drake's oil discovery at Oil Creek, Pennsylvania, Van der Weyde (1), a physician in Philadelphia, took out a patent entitled "Improvement in the Manufacture of Liquids for Making Ice and for Other Purposes." He separated a liquid which was called in those days "the hydride of propyle" but which he preferred to name "chimogene, meaning cold-generator as its spontaneous evaporation produces an intense cold."

Quoting further, "this liquid, with the others of the same class spoken of, fills the gap thus far existing, in regard to volatility, between ether, which boils at 90°, and liquefied nitrous oxide and carbonic acid, which boils at 130° and 112° below zero—another great advantage is that it can be procured so cheaply, being nothing but a material now entirely wasted in all petroleum distilleries and at the oil-wells. When manufactured at the last-mentioned localities, its boiling-point may be obtained almost as low as that of ammonia, etc." Autorefrigeration is quite well explained in this early work.

Another interesting dissertation on the use of petroleum solvents is found in Gurwitsch (2). He apparently used the term "cymogene" as did Dr. Van der Weyde and called the higher boiling fractions "rhigolene." He describes ice-making and the use of the low molecular weight hydrocarbon gases as anesthetics. Holde (3) discloses a refining process for lubricating oil which consists of treating residua from distillation, having a specific gravity greater than 0.97 "with gasoline or other petroleum distillates having a specific gravity of less than 0.70." Since propane has a gravity of 0.50, it appears to be included in Holde's claim from which the above quotation is made. The term petroleum ether has been used to cover solvents of rather wide boiling ranges and for this reason it appears opportune to quote a patent (4) issued in Poland in December, 1920, entitled "Method for the Separation of Asphaltic Substances from Crudes or Crude Oil Products." Quote—"It is well known that the solubility of the asphaltic bodies which are found in most crude oils and crude oil products decreases if we lower the boiling limits of the gasoline used for precipitation of the asphaltic bodies and, at the same time, its percentage of aromatic hydrocarbons (5)." Quoting further, "The present invention is based on the knowledge that the precipitation of asphaltic substances by means of a mixture of hydrocarbons originating from natural gas which is stable in the liquefied condition at room temperature in the case of the application of over-pressure only, is not only possible, but that we are able, by means of such a mixture to precipitate a considerably higher amount of asphaltic bodies than when using lowest boiling point gasoline or petroleum ether fractions. Such a hydrocarbon mixture may be obtained either directly from gasoline containing natural gases or by distillation of commercial gasoline prepared from natural gas."

The data given in Example No. 1 in the patent are shown in Fig. 2.

(a) From the natural bituminous material originating from Boryslav crude oil, the asphaltic bodies were pre-

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cipitated at a ratio of 1 to 5 by means of a gasoline boiling within a range of 179.6° F. to 197.6° F. The amount of asphaltic bodies precipitated was 2.6%.

(b) From the same bituminous material the asphaltic bodies were precipitated on dilution in the ratio 1 to 5 by means of a petroleum ether boiling between 32 and 42° C. (89.6 and 107.6° F.) The amount of the asphalt precipitated was 8.7%.

(c) From the same bituminous material the asphaltic substances were then precipitated with the application of pressure by means of a dilution in the ratio of 1 to 5 with the aid of a mixture of hydrocarbons liquefied under pressure and obtained by redistillation of Boryslav gasoline, the boiling point of which was within —5 to 8° C. (23.0 to 46.4° F.) The amount of the asphalt precipitated rose to 13.4%.

In the case of this method, it was found that the asphalt precipitated (Example 1C) was free from paraffin-like substances if the precipitation was carried out at a temperature not lower or not much lower than room temperature, with the application of overpressure. For this reason the material obtained from the hydrocarbons of natural gas and liquefied under pressure may be considered as the most efficient asphaltic precipitating agent which does not effect a simultaneous precipitation of the paraffin-like substances.

The utilization of the hydrocarbon mixtures liquefied under pressure makes possible, on the one hand, a commercial preparation of asphalt from crude oils or asphalt-rich crude oil products, while, on the other hand, it allows the precipitation of the asphalt from crude oils or crude oil products to such extent that a further decoloring treatment by means of well-known decoloring agents, for instance, bright oil, vaseline, etc. is found technically and economically possible; the final product is a bituminous, bright substance.

Starting from this supposition that asphaltic substances are more easily soluble in "higher" hydrocarbons, prior to their precipitation, the gasoline, kerosine and medium oil fractions were distilled off from the crude. In this manner it became possible to increase the percentage of precipitated asphaltic substances.

It is well known that as the resins in petroleum are converted to asphaltenes (by heat or otherwise), the insolubility in petroleum ether becomes marked but the asphaltenes are still soluble in benzol, carbon bisulfide and carbon tetrachloride. From a chemical standpoint, as the asphaltenes dehydrogenate into carbenes and carboids, the solubility in these solvents decreases. As stated by Gruse (6), "it is obvious, of course, that in a complex substance such as petroleum, some types of compounds will probably be converted more readily and will be carried farther along in the series than the others. Thus some hydrocarbons will have been converted to asphaltenes while others are still in the resin stage." There is no sharp line of demarkation between lubricating oil fractions anl resins and the separation is dependent on solvent used, ratio of solvent to oil (weight or volume) temperature and pressure of the operation.

A search of the literature reveals that Holde and Eichman (7) studied these resins in 1906-1907. They extracted resins from Russian lubricating oils with hot 70% alcohol, the resins amounting to 4% of the oil. By acid refining this amount was cut in half. Holde's classification of compounds more asphaltic than resins rested on solubility. The asphaltic pitches were soluble in petroleum ether but insoluble in an alcohol-ether mixture. The asphaltenes were insoluble in cold petroleum ether.

The nearest approach to our modern applications of solvent refining is the use of diluent naphtha in cold settling and later in the separation of wax by centrifugal means. The old methods of removing both resins and asphaltic compounds by acid and clay treatment was based upon the known facts of the case. Asphalts can be removed by acid treatment as well as some of the resins. Upon filtering the acid treated oil, resins are removed by the clay and can be recovered by extracting the clay

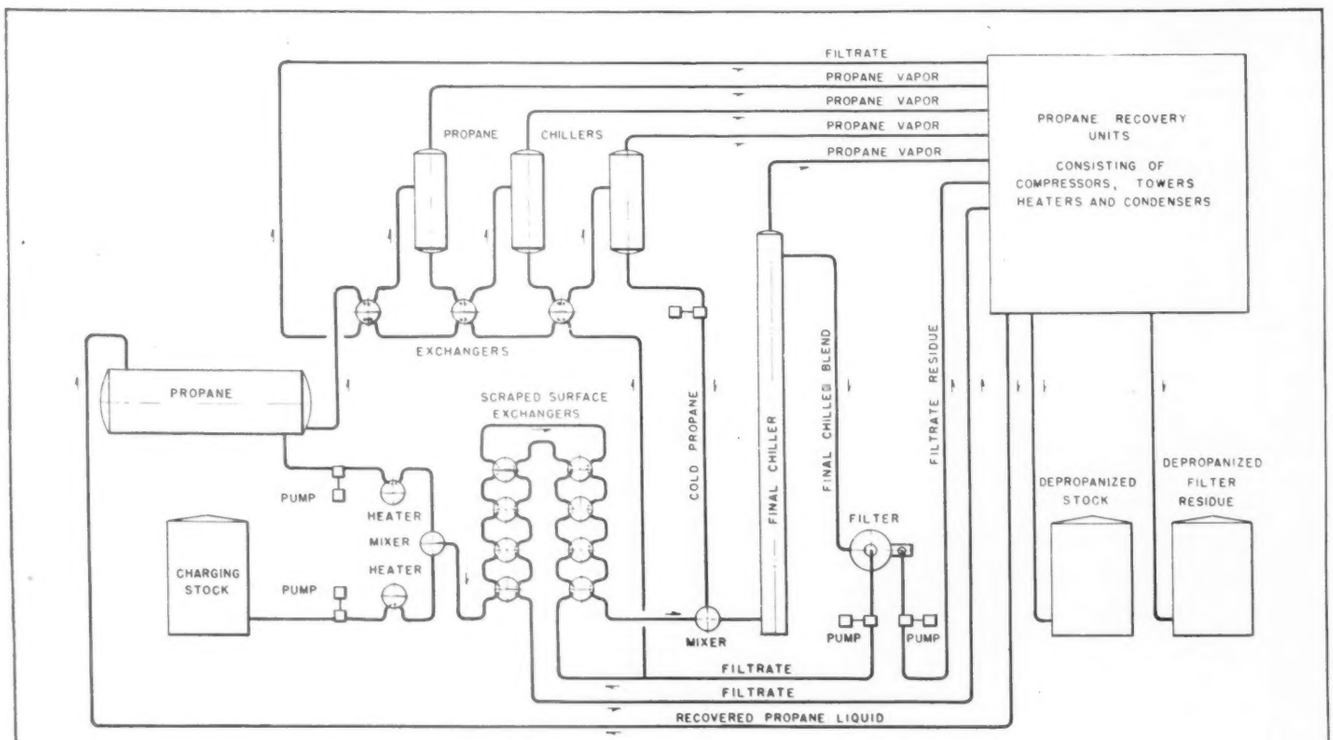

FIGURE I

SCHEMATIC FLOW DIAGRAM

SUN-ALCO PROPANE DEWAXING PROCESS

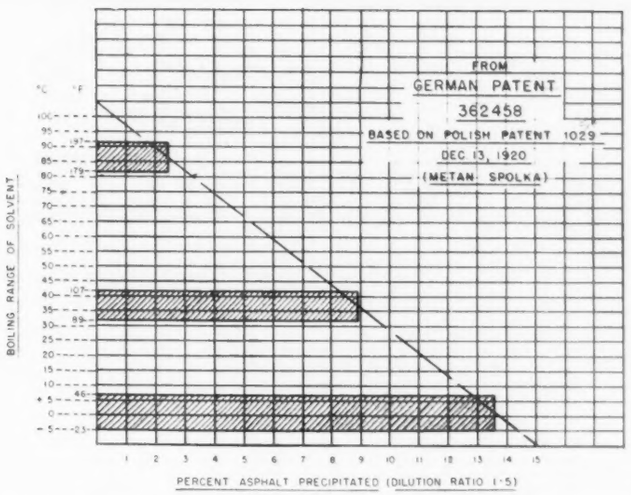

Fig. 3. Solvent extraction of asphaltic bodies was described in this German patent in 1920 based on a Polish patent. See Fig. 2.

with chloroform. This is one distinguishing characteristic between resins and asphalts, i.e., the resins are adsorbed by Fuller's Earth from a warm petroleum ether solution of asphalt (8).

The foregoing discussion is more applicable to mixed base oils than to oils of Pennsylvania or paraffin base in that in the latter there is not a large amount of asphalt, and this permits lubricant manufacture from crude oil residua whereas the mixed base and asphaltic oils are first distilled to throw out the major portions of the asphalt. The fact remains that solvents probably do a better job of asphalt and resin removal than did the old combination of distillation, acid treating and clay finishing.

The use of petroleum naphtha for dilution of lubricating stocks for aiding in the removal of wax by cold settling was the logical step toward solvent deasphalting and dewaxing. It was learned from this work that the lighter the naphtha, the better the settling results. The same was found in centrifugal dewaxing

The introduction of propane was a step forward in that it does the job more efficiently than do the higher homologs butane, pentane, and hexane. It is then quite in order to find that the first application of propane was to throw down asphalt as a precipitate. Petroleum ether and propane, therefore, are more closely allied in the results they produce when mixed with lubricating oil stocks than any other two solvents with which we are familiar. They differ in degree as to the results accomplished. An important result is the separation of the higher lube fractions which cannot be obtained by distillation from asphalt by commercial means.

The introduction of propane into the lubricating oil manufacturing processes has resulted in other advantages with which the most of us are cognizant. The use of the diluent, in this case, as the refrigeration medium, needs no introduction. Suffice to say that the present competitive schemes or processes for the dewaxing of lubricating oil stocks revolves about this multiple use of the solvent, i.e., (1) as a diluent to reduce viscosity and (2) as a refrigerant and (3) as a precipitating agent or (4) as various combinations of the three items mentioned *under controlled conditions*. The recognized processes for propane deasphalting, deresining, and dewaxing appear to differ mainly in the autorefrigeration usage and the steps employed in the process.

One advantage of propane dilution is the fact that dewaxing is readily accomplished in its solution. Another attractive feature of propane is that it is a refrigerant and can be liquefied, cooled, expanded and will produce refrigeration down to very low temperatures. Since it can be evaporated from its solutions to produce refrigeration, there is no loss of heat transfer through metallic walls of heat interchangers, i.e., heat is removed directly from the solution.

Last but not least is the fact that the larger refiners, as a rule, are natural producers of propane and they do not have to depend upon or pay profits to an outside source of the diluent-refrigerant. In some cases, the refiner, through other unrelated refining operations, produces liquid propane and can regain some of the energy expended in rendering it liquid, by expanding it to do work and produce refrigeration at the same time. The smaller refiner can buy the solvent at reasonable prices in the open market and it does not become a contaminant in his vapor recovery cystem and losses go into fuel.

For various reasons, some of which will be mentioned, propane is the most desirable low molecular weight hydrocarbon to use in this work. Asphaltic residua and wax-bearing residua are handled in the same manner but the latter begins to precipitate wax from the propane-oil phase upon mixing with propane, generally at room temperature, depending upon the solvent ratio and the wax content. As the temperature is lowered, additional quantities of wax precipitate. The commercial criterion is that temperature at which the pour and cloud test specifications of the finished oil are satisfied. Another reason for propane's popularity for this work is because it is available in most locations and it is of no use for motor fuel. Butane, while it has quite satisfactory solvent qualities, is utilized both in motor fuel and in other industries so that the material is too valuable to use as a simple solvent.

Going to the lower molecular weight petroleum gases, ethane, for example, exerts too high a vapor pressure to make its use practicable in reasonably priced equipment. It so happens that the atmospheric boiling point of propane is as low as it is necessary to go to accomplish the results desired. It is not surprising therefore to find that propane has forged ahead during the last few years to a position where it is a serious competitor to accepted refining methods and materials.

There has been considerable discussion of propane treating during the past few years. The more important references are listed in the bibliography for convenience.

The process which we will now describe differs from those described in the literature in two essential respects; (1) continuous chilling as opposed to batch chilling and (2) simultaneous deasphalting, deresining, and dewaxing are accomplished.

The Sun-Alco Process uses an optimum proportion of propane to obtain the final result on the particular stock in question to reduce its viscosity and employs indirect refrigeration on the mixture to a point where approximately 90 per cent of the refrigeration duty has been accomplished, only evaporating propane to attain the remaining 10 per cent of refrigeration. In the Sun-Alco Process, propane is autorefrigerated alone and the cold propane is injected at the 90 per cent point of refrigeration. The reason we have maintained our indirect chilling process is to be found if one studies critically the crystallization of paraffin waxes and the effect of extraneous or other compounds. The inter-effect of proportions of propane oil and wax in the cooling stage, if properly controlled, results in great speed of chilling without the formation of minute crystals which filter poorly. Our continuous process is subject to strict control. The range of control is such that in some combinations results are obtained which are impossible in batch systems.

The success of propane dewaxing depends upon the rate of wax separation, so much so that we are not interested in autorefrigeration exclusively as a chilling means. This is due to inherent limitations in the autorefrigeration process.

The reasons for the development of different systems of propane treatment of lubricating stocks are probably best understood if we consider the two funda-

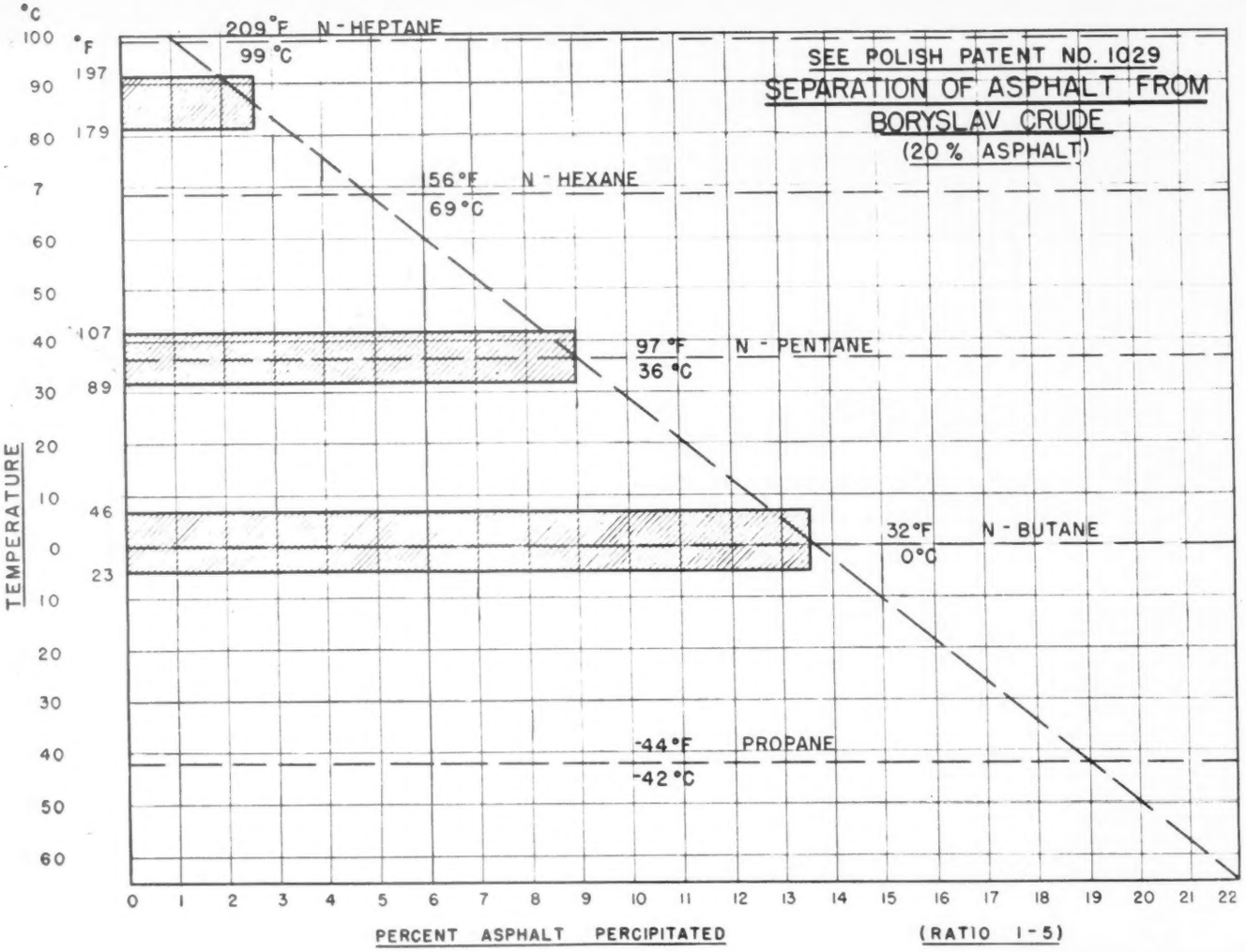

Fig. 2. Use of solvents in extraction of asphaltic substances from crudes was described in Polish patent No. 1029. Gasoline (range 179.6-197.6° F.) was used to precipitate 2.6% asphalt from the natural bituminous material. Then "petroleum ether" (range 89.6-107.6° F.) precipitated 8.7% asphalt. Finally, by use of a mixture of hydrocarbons liquefield under pressure (range 23-46.4° F.), the amount of asphalt precipitated rose to 13.4%

mental types of stocks upon which the greater proportion of propane treatment is bound to be associated. These two types are represented by Pennsylvania and by Mid-Continent lubricating stocks, the latter including any naphthenic stocks carrying wax. With the two main stocks defined, it is not unusual to have groups of technologists working on separate processes. This is actually the case.

Dewaxing Distillates vs. Residuum

The two problems in connection with the two representative types of crudes, Pennsylvania and Mid-Continent are essentially problems inherent in treating of residua and those of treating distillates. The Mid-Continent problem is one of working with topped crude as raw material whereas the Pennsylvania problem involves the treatment of Pennsylvania wax distillate amounting to 12-15% of the crude as well as Pennsylvania Steam Refined Stock amounting to 18-20% of the crude, with the possible alternate of handling a 38% Reduced Pennsylvania Crude.

The gains from the utilization of propane in treating Pennsylvania oils are mainly due to larger yields of lube oil and the enhanced decolorization resulting in lower filter costs. If this cannot be done, the attraction for propane is limited. The Mid-Continent operation, however, is one where vacuum distillation for removal of asphalt is replaced by propane treatment, eliminating to a large extent the decolorizing by acid and replacing it by solvent treating such as furfural, phenol, duo-sol, nitrobenzene or sulfur dioxide, etc. At the same time, possibilities of new products obtainable by this process are opened up.

(Fig. 1 illustrates the main operations and principal vessels.) As an example of our operation on topped crude, we make a low ratio blend of oil and propane (for example, one to one) which is pumped through a mixing device. The blend is passed through a scraped-surface type of exchanger such as a conventional wax distillate type double-pipe chiller. The mixture is chilled to —25° F. or lower and is then mixed with additional propane which has been chilled to —45° F. to bring the ratio to 5 parts of propane to 1 part of oil. The chilled mixture is then filtered. The asphalt acts as a filter aid and high rates are obtained.

The following tables give the distillation breakup on (1) 36% topped Mid-Continent Crude, (2) dewaxed, deasphalted Mid-Continent Crude. and (3) filter residue.

These tables show that:

1. The topped crude or residuum carries all the non-viscous and viscous neutral from Mid-Continent crude and the overhead fractions are good stable colors, show a good oxidation, and low carbon residue.

2. A large quantity of light color, sweatable-waxes can be distilled off overhead (over 50%).

3. It does not degrade the oils to redistill them after propane dewaxing. The dewaxed, deasphalted oil can be either solvent treated before fractionating, or individual cuts may be solvent refined thus producing the maximum per cent of light body, light color oils at the lowest treating, distilling, and filtering costs.

From the average lubricating oil plant which would be built up around propane dewaxing and deresining, there is usually no possible commercial disposal of all the petrolatum to refined waxes. Some of it must be burned or cracked. It appears that the most economical

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TABLE 1

Mid-Continent Topped Crude, 36%

Cut	Grav.	Flash	Fire	Viscosity 100	Viscosity 130	Viscosity 160	Viscosity 210	P.T.	Color	°F. Bulb M.P.	MEK % Par.	M.P. of Par.	% Crude
10%	33.8	240	260	40	37*	..	..	+ 30	1+	Liquid	1.0	.....	3.6
20%	30.8	335	360	56	45*	..	..	+ 60	1½—	Liquid	12.7	108—110	3.6
30%	28.8	355	420	85	59	..	39*	+ 85	1¾	80—	17.4	116—118	3.6
40%	27.1	405	490	166*	93	..	45	+105	2¾—	96— 98	19.5	130—132	3.6
50%	25.7	425	510	253*	..	79	50	+115	3¼	104—106	19.1	136—138	3.6
64.5%	24.1	485	565	590*	..	133	66	++120	4+	116—118	19.4	140—142	5.22
Btms.	13.7	615	695	..	..	5176	1130	+110	..	..	..	..	12.78
Chg.	23.1	235	400	..	245	132	68	+105	..	104—106	17.0	132—134	36.00

Cast and Color—Good.
* Extrapolated from the A.S.T.M. Chart.

TABLE 2

Vacuum Distillation and Test Data on Dewaxed-Deasphalted Mid-Continent Crude

Cut	Grav.	Flash	Fire	Viscosity 100	Viscosity 130	Viscosity 160	Viscosity 210	P.T.	Color	ASTM Cloud	Oxid.	Con. Carb.	% Yield	% Crude
10%	33.7	220	245	41	37	....	....	—5	1—	+4	....	....	5.38	1.937
20%	30.3	300	330	50	42	....	....	0	1+	+18	....	....	5.38	1.937
30%	26.8	340	390	77	54	....	37*	—25	1½+	+14	..	.	5.38	1.937
40%	25.0	385	440	157	86*	....	42	—10	2	+8	59.6	0.01	5.38	1.937
50%	23.5	430	480	323	147*	....	50	—20	2½+	—4	65.6	0.02	5.38	1.937
60%	22.1**	450	530	784	300*	....	65	—25	3¾	—18	64.4	0.14	5.38	1.937
70%	21.3	485	560	1315*	453	....	78*	—20	4¼	—22	54.0	0.46	5.38	1.937
75%	20.6	490	580	2700*	810*	....	105	—5	5½	..	....	..	2.69	0.969
Btms.	16.1	605	680	....	....	3571	1087	+60	....	..	....	Ash	13.45	4.842
												Trace		
Chg.	22.9	310	355	428	188	....	56	0	....	....	....	....	53.8	19.370

Cast and color — good. *Extrapolated from the A.S.T.M. Chart. **Extrapolated from the V.G.C. Chart.

TABLE 3

Vacuum Distillation and Test Data on Filter Residue

Cut	Grav.	Flash	Fire	Viscosity 100	Viscosity 130	Viscosity 160	Viscosity 210	P. T.	°F. Bulb M. P.	% Par. MEK	M. P. of Par.	% Charge
1	35.5	275	300	45	..	....	....	+65	.....	27.5	102-104	10.0
Btms. No. 1	....	....	....	..	..	....	....	..	132-134	40.1	134-136	10.0
2	34.6	335	405	..	49	....	36	+105	94-96	45.7	116-118	8.0
Btms. No. 2	....	....	....	..	..	....	....	..	138-140	39.9	138-140	10.0
3	32.9	395	455	..	59	....	39	+115	108-110	51.0	126-128	6.2
Btms. No. 3	....	....	....	..	..	....	....	..	144-146	37.0	140-142	10.0
4	..	435	495	..	..	....	42.5	+120	116-118	50.3	132-134	4.6
Btms. No. 4	....	....	....	..	..	....	....	..	150-152	35.8	146-148	10.0
5	....	445	530	..	..	....	48	+120	124-126	50.2	138-140	3.1
Btms. No. 5	....	....	....	..	..	....	....	....	154-156	33.9	146-148	10.0
Chg.	22.0	360	450	..	..	246	111	...	.....	....	.....	....

The bottom cuts were run by the MEK method of analysis. Total Distilled, 31.9%. Total Bottoms, 50.0%. Bottoms Left, 18.1%.

disposal of the wax and asphaltic material is in one product and then by-product finishing equipment can be installed for making whatever amount is required into finished waxes or finished asphalts. The concentration of waxes in the filter residue makes a great difference in its distillation characteristics.

Particular attention is invited to the fact that our process is *continuous* and there are no surge tanks for blend receiving, filter charge or asphalt settling. The process is a tubular system through the chilling up to the filter supply.

The simple flow of the process in addition to the high rate of separation of wax and cake more than justify the residuum process in comparison to a distillate system or a deasphalted residuum system for mixed-base Mid-Continent Crudes.

The application of the Sun-Alco propane process to Pennsylvania type oils differs from the Mid-Continent operation in that either a Pennsylvania long residuum amounting to 38% of the crude oil can be used as charge stock or a wax distillate may be taken from a fractionating tower and a steam refined cylinder stock made as a residue. In the latter case it is necessary to either operate on wax distillate and then on cylinder stock or build a plant with parallel flow of the two charge stocks. The preferable operation would be the latter and this will therefore be discussed in some detail. Pennsylvania Crude is fractionated into a wax distillate containing the neutrals and the bottoms consisting of steam refined stock which run to separate storage tanks. If the conventional pressable wax distillate is carefully fractionated into 10% cuts, the characteristics would be somewhat as follows:

TABLE 4

Inspection of 10% Cuts of Pennsylvania Wax Distillates

	API Grav.	SUV. Vis. @100-130°F.		M. P.	MEK. % Par.	M. P. of Par.
1-10%	42	35	....	.....	0.8	.....
2-20%	41	40	....	.....	3.2	84- 86°F.
3-30%	38	47	....	.....	10.1	92- 94°F.
4-40%	36.5	55	....	.....	14.1	96- 98°F.
5-50%	35.4	60	....	.....	16.2	106-108°F.
6-60%	34.3	81	....	74°F.	16.6	114-116°F.
7-70%	33.1	99	....	84°F	16.8	122-124°F.
8-80%	32.3	..	79	90°F.	16.6	124- 26°F.
9-90%	30	..	105	96°F.	15.7	130- 32°F.
Res.	29	..	199	96°F.	14.5	130- 32°F.
Charge	35.1	70	....	.....	11.9	.....
Combined 1st 50%	38.4	44	....	.....	8.7	98-100°F.
Combined 2nd 50%	32.1	..	91	90°F.	15.8	120-122°F.

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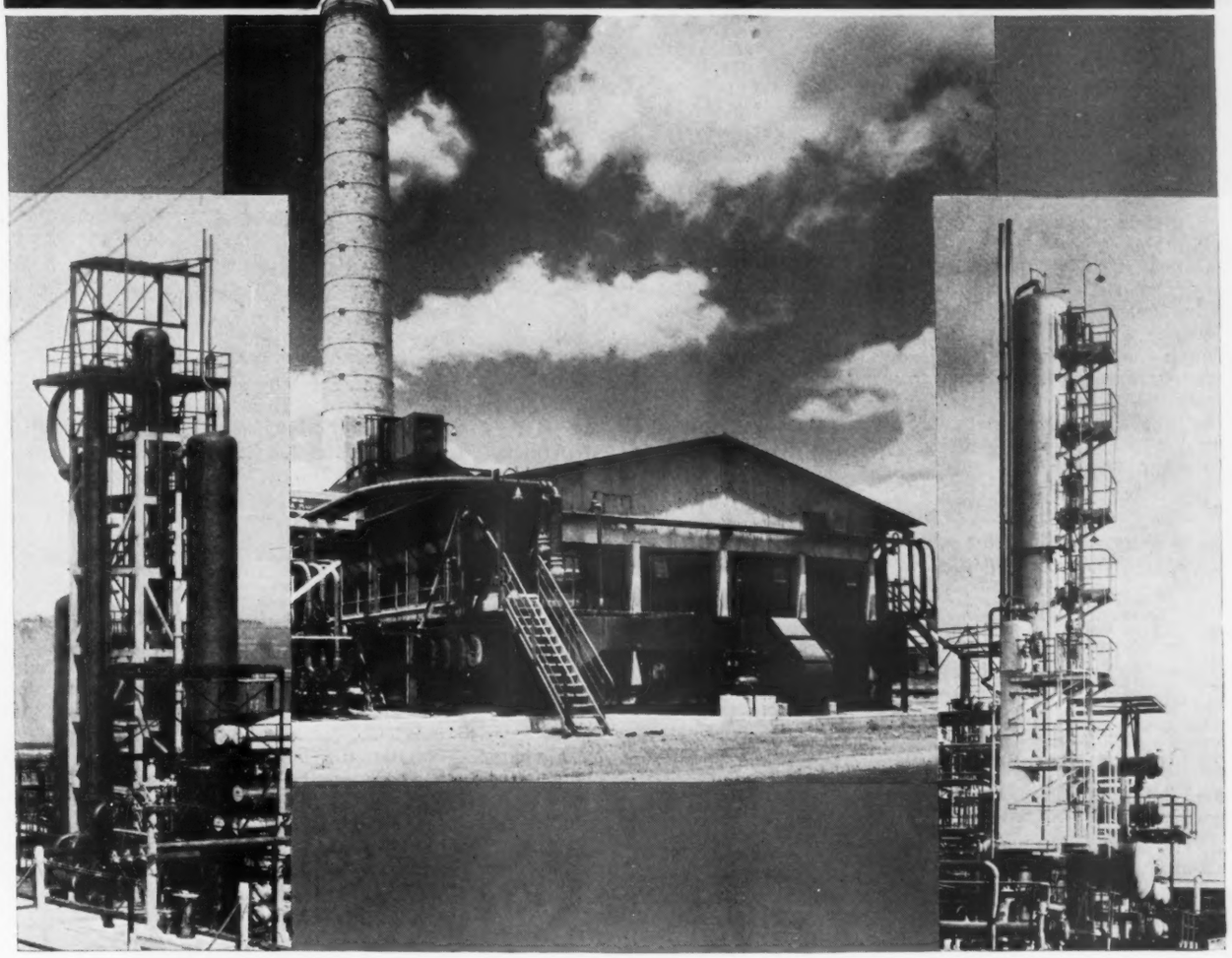

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The material indicated above can be run as a whole fraction but is preferably cut at the 40% point since it is not highly desirable to propane treat materials of low viscosity containing waxes of low melting points such as are contained in the first four 10% cuts. In other words, the distillate we prefer to treat shows approximately a Saybolt viscosity of 100 at 100° F. instead of the conventional 70 Saybolt at 100° F.

This wax distillate is charged to conventional wax distillate type chillers with a propane dilution of only 10-20% (volume). Upon leaving the exchangers the wax distillate is diluted to 80% propane by the addition of cold propane. The propane is chilled simultaneously in a separate chilling system utilizing the cold filtrate for exchange on the scraped surface chillers of the original blend and then against the propane being chilled for cold blending.

When operating on Pennsylvania steam refined stock, we blend propane with stock and chill it by indirect means. Additional cold propane is then added to the optimum filtering dilution. The steam refined stock obtained by this method from Bradford Crude shows about 3000 Optical Density whereas the bright stock obtained is better than 1000 Optical Density. The filter residue from this operation can be distilled taking overhead two 10% fractions, i.e., 20% overhead of light colored wax showing a melting point between 130-138° F. The residue of dark petrolatum carries the coloring material normally lost in the filtration process.

The following table gives the O.D. of each cut representing a yield of 100 gallons of bright stock or cylinder stock finished to this color.

TABLE 5

Optical Density of Five 20% Cuts of Pennsylvania Wax Distillate

Cut No.	Dewaxed deresined 1100 OD*	Dewaxed deresined 925 OD*	Dewaxed deresined 1260 OD*	Charge Stock Steam cyl. stock 3020 OD*
1	157 OD	121 OD	119 OD	269 OD
2	284 OD	298 OD	241 OD	540 OD
3	351 OD	440 OD	376 OD	830 OD
4	578 OD	535 OD	457 OD	995 OD
5	615 OD	657 OD	647 OD	1050 OD

*Color before filtering in optical density.

Summary

The Sun-Alco process described has the following features:

1. Very accurate control of the blend of propane and oil, through a wide range of dilution.

2. Indirect chilling through recovered refrigeration carrying the initial blend to within 20-30° F. of filtering temperature.

3. Accurate control of filtering dilution.

4. A relatively small quantity of material is in the state of process at any one time which is a real advantage in large plants or parallel systems.

5. The only high pressures in the plant are in tubular equipment thus making it possible to carry low pressure on all tanks and large vessels.

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Cancer-Producing Hydrocarbons Discussed at A.C.S. Meetings

Characteristics of hydrocarbons which induce skin cancer are being determined by Dr. L. F. Fieser, professor of organic chemistry at Harvard University, and his associates. In recent addresses to local sections of the American Chemical Society in the Michigan area, he stated that these hydrocarbons all possess a common chemical skeleton of four benzene rings attached to each other as in 1-2 benzanthracene and contain a methyl or other hydrocarbon group on the 10-carbon atom. Work has been confined to two series of compounds, one related to benzpyrene and the other to methyl cholanthrene.

A sensitive reagent has been discovered which would detect compounds most potent in causing skin cancer in dilutions as low as 1-2 parts per million. Dr. Fieser hopes to be able to show the presence of hydrocarbons in the actual tumor by its use.

It was suggested that spontaneous cancer may arise from abnormal disintegration of such compounds as bile acids. He showed, by means of slides, the structural relationship between certain bile acids, sex hormones, and hydrocarbons which produce sarcomas in mice.

In experiments with mice by subcutaneous injection of a solution with glycerol, methylcholanthrene produced a sarcoma in about 2.5 months. Any elaboration of the structure of this compound led to a decrease of potency. Cholanthrene, with a period of 3.0 months, was found to be about as potent. A series of studies on 3, 4-benzpyrene gave a result in 3.5 months.

Accrediting College Engineer Curricula

Accrediting engineering curricula of colleges is one of the largest tasks handled by the Engineers' Council for Professional development, according to a recent report by that body. Since 1935, 134 engineering schools have submitted 645 curricula for accrediting, 129 schools have been visited, 374 curricula have been accredited, 71 have been accredited provisionally for a limited period, and action deferred in eight cases; 173 curricula have been refused accredited status. This work is only part of the large field of "non-technical" activity which the engineering profession must investigate.

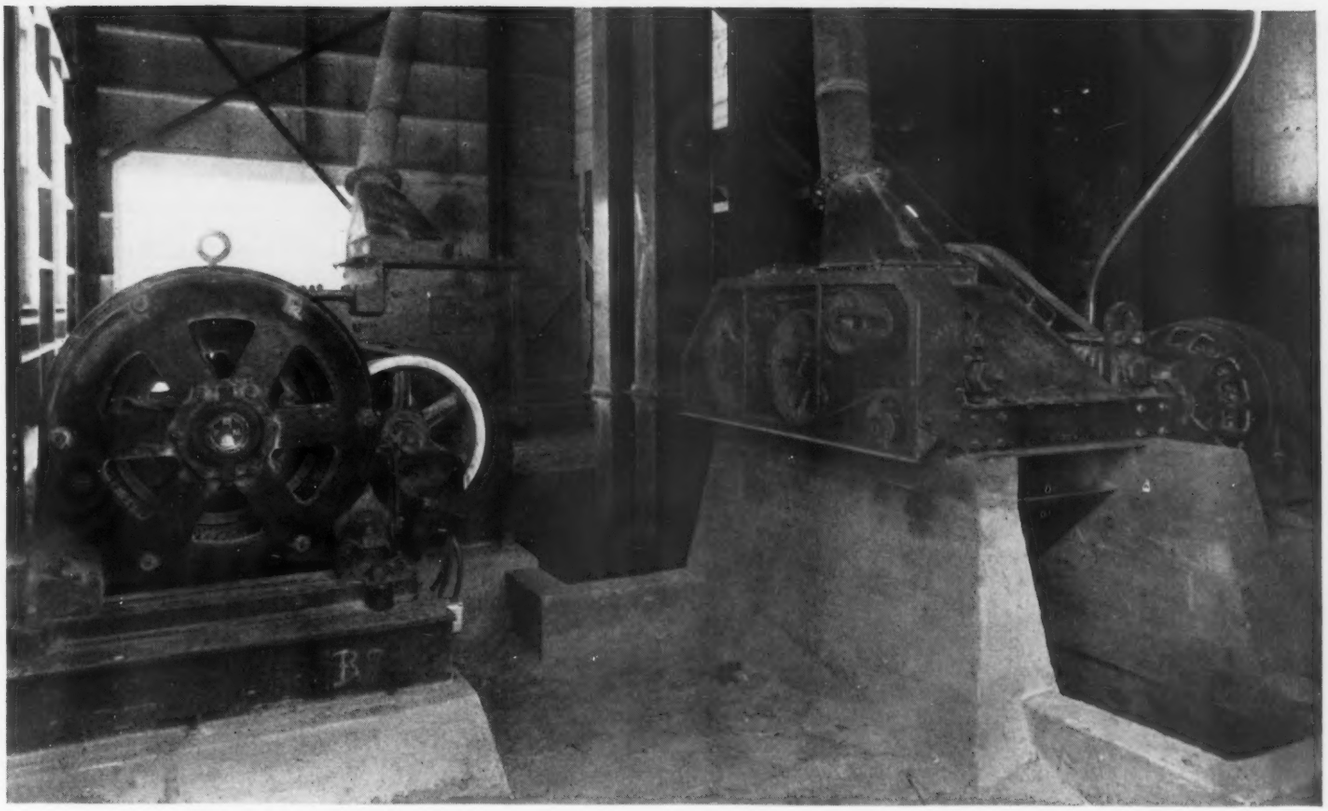
Lummus Contracts for Two Foreign Refineries

Construction of a 15,000-barrel viscosity breaker and gas oil cracking unit for Companie Francaise de Raffinage, to be built at Normandy, France, near LeHavre and licensed under Gasoline Products patents, is announced by the Lummus Co. The greater portion of the equipment and labor used on this job will be French.

A. C. Gronbeck, London manager for Lummus, will be in general charge of the operations, in which Socap, large French construction firm is associated. "Jack" Kelly of the Lummus company is resident engineer on the work, who will also be aided by "Jim" Hogan and J. F. Thornton, Lummus engineers now in France.

Contract for design and construction of a 6000-barrel crude distillation plant for Assam Oil Co., Ltd., of Burma, is also announced by Lummus. A part of the material in this work will doubtless be purchased in America, it is understood, and construction will start in the near future, officials stated.

CHICAGO—Vladimir N. Ipatieff, director of chemical research, Universal Oil Products Co., has been chosen to represent Northwestern University at the Tenth Annual Congress of Chemistry in Rome, May 16.



First treatment to raw bauxite is administered by the hammermill (left) and disintegrator (right)

726.1

Filtering with Bauxite Produces Economies in Lube Processing

ECONOMIES in the use of bauxite type percolating material for filtering lubricating oils have been subject to question and considerable interest in the past year or so as a result of improvements in their qualities. Frequent comparisons with Fullers earth have been made and advocates for both methods of filtering can be found among experienced refiners.

Best results with either material naturally result when the best of either material is employed. The following comparison has been made by the Max B. Miller & Co. between its bauxite material, sold under the name of X-YTE, and a "standard" Fullers earth. The Miller product is a high alumina activated earth produced by calcining, activating, and sizing a selected bauxite. Before deciding upon a certain process of production a variety of ways were tried on a commercial scale and the products tried out in an oil refinery. Considerable plant and laboratory data have been accumulated.

Refiners have been interested in bauxite filter material for several reasons, it is indicated by Miller engineers. It may be re-burned and re-used as long as it can be retained without losing a decolorizing efficiency of 80% to 90% of the original material. Average dust-loss per burn is between 1% and 2%. Although the bauxite material is only two-thirds as efficient by weight as new Fullers earth, its weight efficiency after 50 burns is the same as the average efficiency of Fullers earth during 17 burns, according to the Miller company. Efficiency on a volume basis is much greater because it weighs 80% to 100% more than Fullers earth. In consequence, its use will increase the capacity of a filter house.

Without satisfactory quality in the filtered oil, efficiency characteristics would be meaningless. Results of a test reported by Miller engineers with a certain Pennsylvania stock is given herewith in Table 1. This table shows some qualities of oil higher when filtered through bauxite than when filtered through a standard Fullers earth. Improvement is shown in lowered carbon residue, higher A.P.I. gravity, higher viscosity index, and greater stability to oxidation.

	X-YTE		FULLERS EARTH	
Filter Charge	Tempered	Burned	Tempered	Burned
Gravity A. P. I.	26.2	25.9	25.7	25.6
Flash °F.	585	585	585	585
Viscosity at 210°F.	171.0	177.7	182.3	186.3
Viscosity at 100°F.	2860	3034	3184	3286
V. I.	100.0	100.3	99.9	100.0
Carbon Residue %	1.38	1.69	1.90	1.98
Color A. S. T. M.	8	8	8	8
Color after stabilizing in an oven for 7 days	8	8	8+	8+
Sligh Number	2.8	3.1	2.8	3.3
Emulsion, Steam	O. K.	O. K.	O. K.	O. K.
Pour °F.	0	0	0	0

Ability to increase the yield of a given filter is one of

The intermediate screen is one step in the sizing of particles

the attractive features of bauxite in connection with plant enlargement. Only change required in a filter house is provision for higher temperatures of burn, up to 1200° or 1400° F., depending upon the stock to be filtered. Reburning can be done in Wedge and Herreshoff furnaces or by rotary kilns.

Evidence of the greater yield of oil filtered through bauxite is shown by their results in a test on a Pennsylvania steam refined stock which was filtered to an 8 A.S.T.M. color by equal volumes of plant burn X-YTE and No. 6 burn standard Fullers earth having equal weight efficiency. The oil was passed through 6- by 28-foot filters containing 275 cubic feet each of material which in one instance weighed 8.5 tons and in the other, 5 tons. Yield through bauxite was 45 barrels compared with 26.5 barrels through Fullers earth. On this basis, without taking into account the greater time required to filter through the bauxite, the yield was 71% greater.

On-stream time for the bauxite material was 41 hours as compared with 24 hours for Fullers earth. Time for other parts of the cycle was the same: 14 hours for fill and through, 20 hours for blowing, 26 hours for wash and steam, and 3 hours for dump and charge. Total cycle for bauxite required 104 hours and for Fullers earth 87 hours. This is expressed in the following table which shows the actual advantage with the increased time taken into consideration.

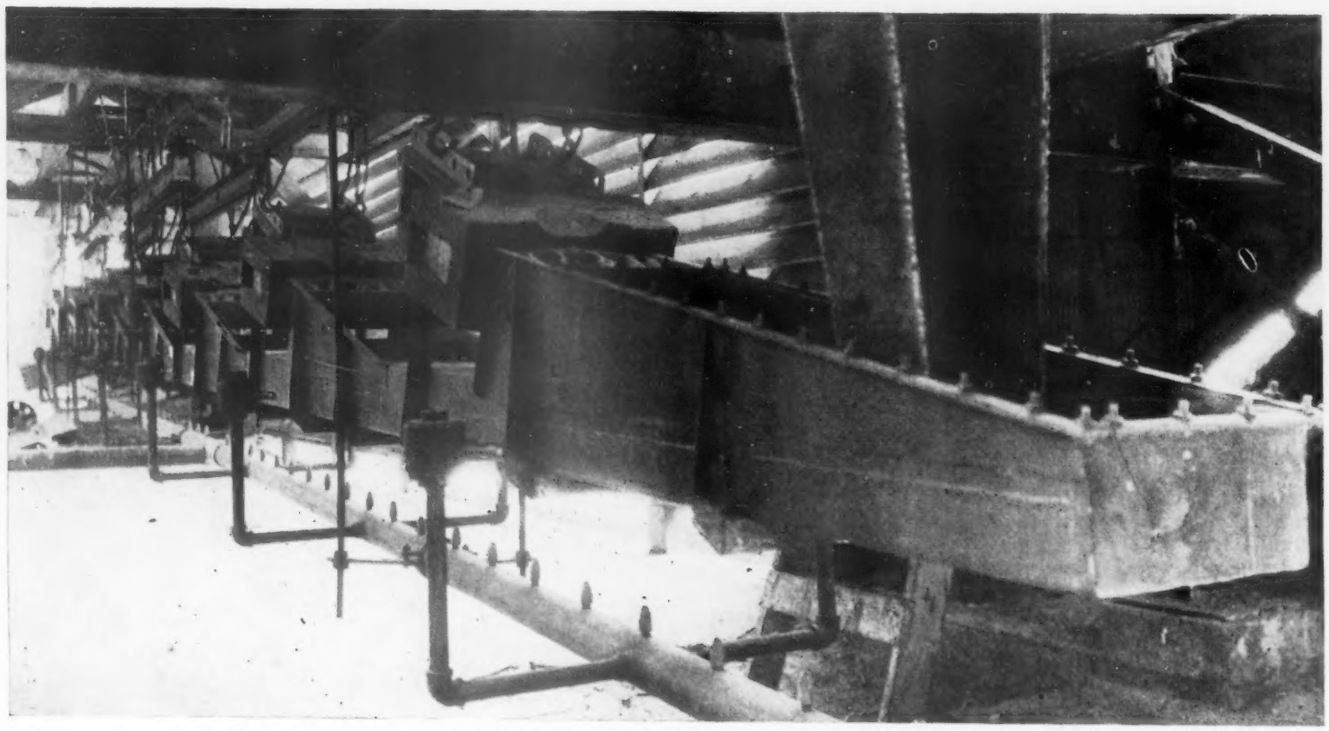
	Bauxite	Fullers Earth
On stream, hours	41	24
Total cycle, hours	104	87
Ratio "On stream" to cycle	41/104 = 0.394	24/87 = 0.276
Filter yields		
Bbl./hr. filter time	1.1	1.1
Bbl./hr. cycle time	0.432	0.305
Increase bbls./hr./cycle time:	0.432 — 0.305 = 0.127 bbls.	
Percentage increase in capacity:	0.127/0.305 = 41.7%	

Filter yield is therefore 41.7% greater with bauxite than with the Fullers earth with which comparison was made.

Since bauxite retains its decolorizing efficiency on reburning, it is neither necessary nor desirable to segregate the material from different burns. This reduces greatly the storage and inventory of green and burned filtering material and simplifies the handling to and from filters.

Heads Refinery Safety Work

Glenn Byers, Shell Petroleum Corp., St. Louis, will serve as 1938 chairman of the American Petroleum Institute's committee on accident prevention in refineries. Appointment was made by N. E. Loomis, newly made chairman of the central committee on refinery technology. H. N. Blakeslee, director of the institute's department of accident prevention, was named secretary of the committee.



After dehydration by heating bauxite passes to this cooler the intake end of which is shown in the foreground

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the 10th of its kind... *designed and built by* LUMMUS

1

The plant was completed exactly on contract schedule despite delays by some suppliers of equipment.

2

In zero weather, initial operations were smooth and continuous.

3

Neutrals of zero pour test ready for shipment on second day of initial operation.

4

Stocks are changed frequently with facility, without slopovers.

5

Dewaxing plant installed, initial operations completed without interrupting operation of existing lube oil plant.

6

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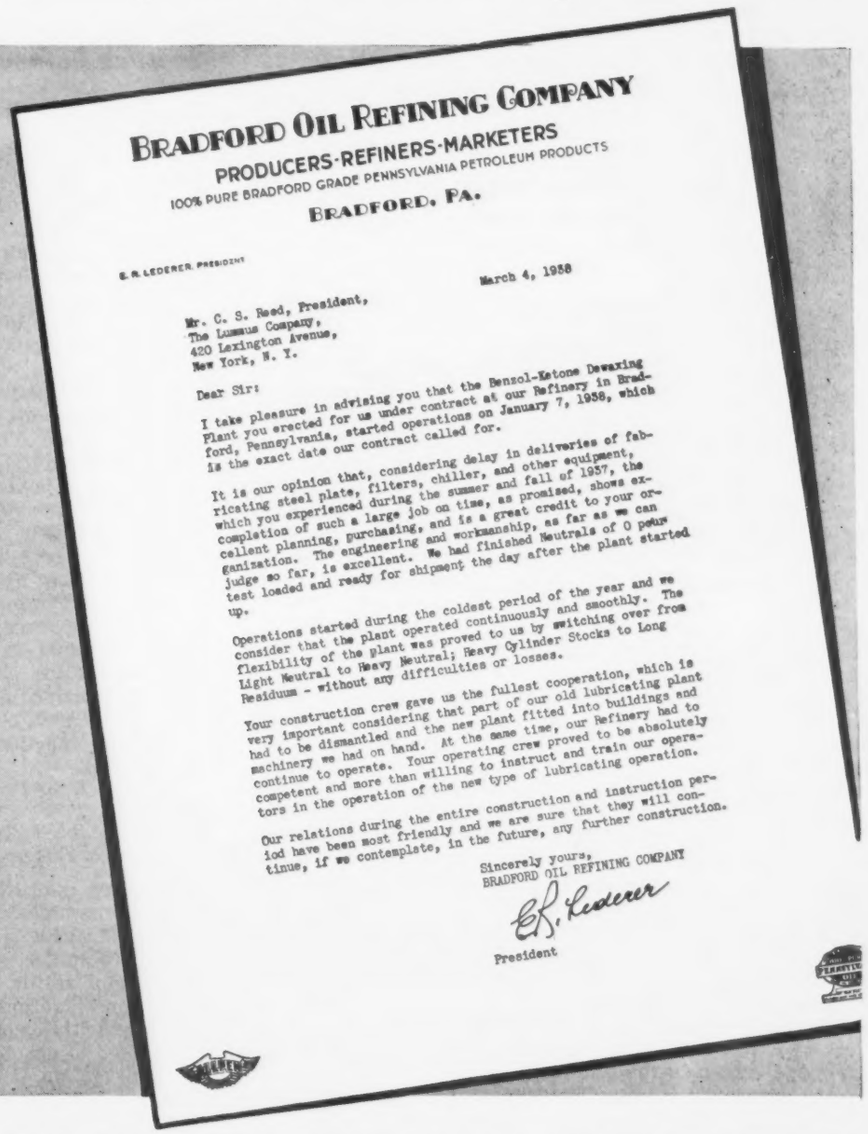

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E. R. LEDERER, PRESIDENT

March 4, 1938

Mr. C. S. Reed, President,
The Lummus Company,
420 Lexington Avenue,
New York, N. Y.

Dear Sir:

I take pleasure in advising you that the Benzol-Ketone Dewaxing Plant you erected for us under contract at our Refinery in Bradford, Pennsylvania, started operations on January 7, 1938, which is the exact date our contract called for.

It is our opinion that, considering delay in deliveries of fabricating steel plate, filters, chiller, and other equipment, which you experienced during the summer and fall of 1937, the completion of such a large job on time, as promised, shows excellent planning, purchasing, and workmanship, as far as we can judge so far, is excellent. We had finished Neutrals of 0 pour test loaded and ready for shipment the day after the plant started up.

Operations started during the coldest period of the year and we consider that the plant operated continuously and smoothly. The flexibility of the plant was proved to us by switching over from Light Neutral to Heavy Neutral; Heavy Cylinder Stocks to Long Residuum - without any difficulties or losses.

Your construction crew gave us the fullest cooperation, which is very important considering that part of our old lubricating plant had to be dismantled and the new plant fitted into buildings and machinery we had on hand. At the same time, our Refinery had to continue to operate. Your operating crew proved to be absolutely competent and more than willing to instruct and train our operators in the operation of the new type of lubricating operation.

Our relations during the entire construction and instruction period have been most friendly and we are sure that they will continue, if we contemplate, in the future, any further construction.

Sincerely yours,
BRADFORD OIL REFINING COMPANY
E. R. Lederer
President

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Papers given here in abstract were presented this week before the Petroleum Division of the American Chemical Society meeting in Dallas.

BY M. G. VAN VOORHIS
N. P. N. Staff Writer

Doctor Sweetening Improvement

Doctor sweetening is still a good method if properly done. Excess addition of sulfur is chief source of difficulty. C. D. Lowry, Jr., C. G. Dryer, Charles Wirth, III, and R. E. Sutherland, Universal Oil Products Co.

Improper doctor sweetening, particularly the use of excess sulfur, has been found to influence adversely the effectiveness of oxidation of inhibitors in sweetened gasoline. By sweetening at 85° F., properly mixing gasoline, doctor solution, and sulfur, and allowing adequate settling time, doctor sweetening can be carried out with minimum sulfur to produce gasoline in which inhibitors are effective. The harmful effect of excess sulfur is apparently due to the formation of polysulfides.

Poor inhibitor susceptibility of the sweetened gasoline, high cost, and lowered octane rating, apparently inevitable to some refiners, have been responsible for replacement of the method. Variation in the results with inhibitors has hindered their more extensive use although in many instances these irregularities have been traced to faulty sodium plumbate sweetening practice and lack of careful chemical supervision. In laboratory tests it has been found that the main point of importance was avoidance of formation of a high concentration of sulfur in the mixture at any time.

The copper strip test, generally accepted as determining whether gasoline is sweet and non-corrosive, is not sufficiently delicate to be used for control of sulfur addition in doctor sweetening.

This is most evident with very sour distillates. The effect of excess sulfur in sweetening West Texas cracked gasoline is shown in the following table:

Excess sulfur, %	0	.005	.0075	.010	.015
Induction period					
Uninhibited (min.)	200	210	115	125	100
Inhibited, .013% U.O.P. No. 4 (min.)	380	400	285	210	175
Copper dish gum					
Uninhibited (mg./100 cc.)	299	273	327	389	357
Inhibited, .013% U.O.P. No. 4 (mg./100 cc.)	5	6	74	82	138

Sulfur added after sweetening usually has no marked influence on inhibitor susceptibility and even a small amount of sulfur produces a corrosive product.

Excessive sulfur is often added to improve the break and accelerate settling of the lead sulfide in the sweetening plant. However, it has been found that satisfactory results can be obtained by attention to mixing, settling, and temperature of gasoline. If a plant has adequate mixing the gasoline may be allowed to break as it leaves the mixers and the amount of sulfur required to do this will not be so great as to harm inhibitor susceptibility.

In a plant with little mixing equipment (3 mixing nozzles in 6 feet of line), a break cannot be obtained in the mixers without using a considerable excess of sulfur. If the break in such plants occurs in the first settler, 3-15 minutes after gasoline leaves the mixers, the results, from an inhibitor standpoint, will usually be satisfactory. If the break occurs in the settler when the gasoline is no longer in contact with doctor solution, however, it tends to produce a finer precipitate settling more slowly than when the gasoline is broken out while still in contact with the doctor solution. As plants deficient in mixing equipment are also often lacking in settling capacity, the treater in such cases faces a serious dilemma.

It has been found convenient in practical doctor plant operation to control the addition of sulfur by the widely used butyl mercaptan test. If used properly it is not primarily a test for elementary sulfur, however. Laboratory tests have shown that less sulfur is usually required at 80° F. than at 60° F. A plant test showed that while more than a minimum amount of sulfur was as harmful at 85° as at lower temperatures, with minimum sulfur, the break was sharper and settling definitely better at the higher temperature.

There can be a large excess of sulfur remaining in gasoline which must be present in the form of polysulfides. The following reactions are proposed to account for their formation:

$$\text{R-S-S-Pb} + \text{S} \longrightarrow \text{R-S-S-S-R} + \text{PbS}$$

$$\text{R-S-S-Pb} + \text{S} \longrightarrow \text{R-S-S-S-R} + \text{PbS}$$

There are indications that polysulfides are able to react with mercaptides. Going back to the fact that a fast break results if sulfur is added after the doctor solution and gasoline are mixed, the reason appears to be that a given amount of sulfur forms less polysulfides if added when a high concentration of mercaptides is already present than if added with doctor solution. If sulfur and doctor solution are added to gasoline at the same time, the above reactions tend to go on if enough sulfur is added to give a fast reaction. If the amount of sulfur added is limited and sufficient time for a slow break is allowed, however, a smaller proportion of undesired products will be left in the gasoline and good inhibitor susceptibility obtained.

* * *

Nitrogen Compounds Isolated

Resolution of organic nitrogen base mixtures into components is accomplished by fractional sulfiting of bases and fractional degassing of their acid sulfites. S. M. Roberts and J. R. Bailey, University of Texas.

A new cyclic process applicable to resolution of organic nitrogen base mixtures into component types has been developed. The process employs "fractional degassing" which results from changing velocity of dissociation of acid sulfites with change of temperature. The process is based upon the reversible equation:

$$\text{Base} \cdot \text{H}_2\text{SO}_3 \rightleftarrows \text{Base} + \text{SO}_2 + \text{H}_2\text{O}$$

In this reaction nitrogen bases are converted to acid

sulfites which dissociate with the liberation of free bases and sulfur dioxide. Since the process involves the *use* of sulfur dioxide in the first phase and its *recovery* in the second phase, it is an economical and practical method of resolution of base mixtures, without any consumption of chemicals.

In experimentally degassing acid sulfites, one liter of kerosine base fraction, of 270-280° C. boiling range, was added to three liters of water and sulfur dioxide was led in until complete solution resulted. Air was passed through the solution, cooled to 20° C., at 500 cc. per minute until evolution of sulfur dioxide ceased. The bases which layered out as a supernatant oil were withdrawn in seven fractions ranging from 20 to 147 cc. The degassing proceeded rapidly for some time and then slowed down, the seventh fraction requiring 24 hours for separation of 20 cc.

Fraction 8 required 3 hours of degassing at 50° and fraction 9 took 6 hours at 80° when, due to a complete sulfite-sulfate conversion by atmospheric oxidation, degassing stopped. From fraction 9, 2 grams of a crystalline salt separated. The liberated base was identified as 2,3,8-trimethylquinoline. The 413 cc. of residual bases was dissolved in 240 cc. of 1:1 hydrochloric acid and seeded with 2,3,8-trimethylquinoline hydrochloride. After 18 hours in the icebox, 12 grams of the pure salt crystallized from the solution. Refractivities of recovered bases gave proof of the value of cumulative extraction in combination with sulfiting and degassing.

In fractional sulfiting experiments with the 270-280° C. kerosine base fraction, one liter of bases was fractionally neutralized with 100-cc. portions of 8% aqueous sulfurous acid under vigorous agitation. At the end of each extraction the aqueous layer was drawn off and the bases were liberated. Confirmation of the presence in relatively large amount of the $C_{16}H_{25}N$ base hydrochloride in extracts was of greatest interest.

Isolation of four quinoline homologs and a trinuclear aromatic base from California kerosine base fraction in the 300° C. boiling range was accomplished by W. N. Axe and J. R. Bailey. In this investigation, distillation, cumulative extraction, and fractional aeration of base-sulfite solutions were employed to yield fractions from which pure components could conveniently be isolated by use of characteristic salts. During the aeration process sulfite-sulfate conversion took place to yield a stable residual solution from which the hitherto unknown 2,3,4,8-tetramethylquinoline was recovered. From fractions layering out at or below room temperature a 2,3-dimethyl-8-propylquinoline was isolated as a nitrate. Two bases of unknown structure and isomeric with A and B, respectively, were separated from fractionated keto bases. A $C_{17}H_{17}N$ compound, which may be a dimethylnaphthoquinoline, was found in transformer-oil bases boiling above 340° C.

* * *

Dehydro-polymerization of Ethylene

Dehydrogenating catalyst is used in polymerization to increase formation of aromatic hydrocarbons from ethylene. V. I. Komarewsky and N. Balai, Universal Oil Products Co.

Formation of aromatic hydrocarbons from ethylene has been increased by a catalytic polymerization in the presence of both polymerizing and dehydrogenating catalysts, and by thermal polymerization in the presence of a dehydrogenating catalyst only. In experimental studies, nickel-nickel-oxide was used as a dehydrogenation catalyst.

Experiments aimed to increase aromatic formation were made following the observation that liquid polymers contained olefinic, paraffinic, naphthenic, and aromatic hydrocarbons were produced during the polymerization of ethylene in the presence of phosphoric acid catalyst. Formation of these hydrocarbons is explained by the following successive reactions: Polymerization of olefines, cyclization of olefines to naphthenes, hydrogenation of olefines by hydrogen released in dehydrogenation of naphthenes to aromatics.

Efforts were exerted to direct these reactions to increase naphthene dehydrogenation in order to produce a larger amount of aromatics in the product. This would also increase formation of paraffin hydrocarbons of iso-

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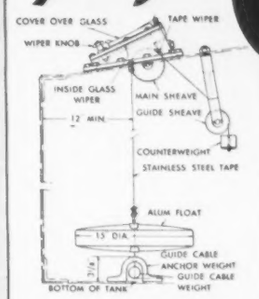

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structure. Therefore a polymer with better motor properties might be produced.

In a standard experiment, the following conditions held: 300° C. (572° F.), 6 hours contact time. 50 kg./cm.² initial ethylene pressure, catalyst 50 grams 90% phosphoric acid and 5 grams nickel-nickel-oxide. The total product was 350 grams (52% of ethylene charged). Results showed the aromatics were formed mostly in the fractions boiling at 150° C. (302° F.) or higher. The total aromatic content of the gasoline fractions as calculated on the yield basis was 11.5%. Amount of naphthenes produced was smaller while paraffins increased in quantity. Gasoline content (e.p. 225° C.) of the liquid product was 61.9% by weight or 65.1% by volume with $N_D^{25°} = 1.4190$.

* * *

Solvent Extraction of Diesel Fuels

Solvent extraction is satisfactory method of improving quality of cracked diesel fuel. C. G. Dryer, J. A. Chenicek, Gustav Egloff, and J. C. Morrell, Universal Oil Products Co.

Improvement of ignition quality of cracked diesel fuel can be produced most effectively by solvent extraction without appreciable change in physical properties of the fuels. Employing sulfur dioxide and furfural as solvents, cetane numbers were raised 2 to 25 units depending upon the fuel, solvent, and amount extracted. Sulfur dioxide was more selective than furfural. The raffinates responded better to a diesel dope, acetone peroxide, and addition of a pour point depressant caused the same lowering as in untreated fuels. Solvent extraction of straight run fuels yielded raffinates with improved properties but the gain in ignition quality was not as great as for the cracked fuels.

Extracted portions of the fuels had low aniline points and high blending values. Extractions with furfural at lower temperatures were only slightly more effective than at room temperature. Hydrogenation is effective where sulfur content is low and produces a large increase in ignition quality without loss of fuel or change in such properties as pour point or distillation range. However, fuels with sulfur content no greater than .05% could not be successfully hydrogenated. Poisoned catalyst was removed and fresh catalyst added several times in some experiments without success. The average improvement in diesel index after acid treatment of both cracked and straight-run fuels was only one or two units. Treatment at higher temperature with more acid could make further improvement but at added expense and greater treating losses.

A raffinate of 60 diesel index was obtained by solvent extraction with a pour point of —35° F. whereas a straight-run fuel with the same diesel index has a pour point of 15° F. The use of more than two volumes of solvent is questionable for the results indicate that the increase in diesel index is too small to compensate for the treating loss and rise in pour point. Pour point depressors such as wool fat or paraflow, when added in amounts of 0.1 and 0.3% were most effective on those fuels which already had low pour points so that their use is limited.

Furfural extractions were carried out in a continuous countercurrent extraction tower consisting of a glass tube 120 cm. long and 4 cm. in diameter. All extractions with furfural were single stage and carried out at room temperature. Extraction with liquid sulfur dioxide was carried out in a batch apparatus at —30° F. Solvent and fuels were agitated for 30 minutes by a motor stirrer and then allowed to separate.

Solvent treatment causes a large increase in ignition quality up to a certain per cent extraction and then as more fuel is extracted the ignition quality, as expressed by the diesel index, rises more slowly. It may be then more economical to extract only a certain percentage of the fuel and then to raise the ignition quality further by doping.

Valvoline Oil Co.'s crude distillation and naphtha re-run unit, operating on Pennsylvania crude at East Butler, Pa., and capable of handling 3000 barrels per day

Heads Testing Committee

S. S. Smith, Shell Petroleum Corp., St. Louis, has been appointed chairman of the 1938 Group 1 sub-committee on natural gasoline of the American Petroleum Institute's central committee on measuring, sampling and testing natural gas and natural gasoline. Chairman of sub-committee 1-A on tank and temperature measurement is H. R. Auerswald, Gulf Oil Corp., Tulsa.

Subcommittee 1-B on measurement by meter will be headed by P. S. Magruder, General Petroleum Corp., Los Angeles, and the California Natural Gas Assn. will act as his committee. Sub-committee 1-C on sampling will be headed by R. D. Hanley, Magnolia Petroleum Co., Dallas, and Sub-committee 1-D on testing is under the direction of R. C. Alden, Phillips Petroleum Co., Bartlesville.

Oil Shale Conference

A conference on oil shale and cannel coal in Glasgow June 6-11 is announced by the Institution of Petroleum Technologists. Over 30 papers will be presented by representatives from several countries. Works visits, included in the program are to Scottish Oils Ltd., Edinburgh Gas Works, Babcock & Wilcox, and a geological excursion to Queensferry.

A. J. Kraemer, senior refinery engineer, U. S. Bureau of Mines, will describe the bureau's oil shale investigations at the conference and Dr. Gustav Egloff, second American representative, will speak on cracking shale oils and coal oils.

Full particulars of the conference are available from the Institution secretary, Aldine House, Bedford St., Strand, W. C. 2, London.

Alexandroff Joins Pate Oil Co.

MILWAUKEE, April 11—Walter A. Alexandroff has joined the staff of the Pate Oil Co., of Milwaukee, as a technical advisor, particularly on metal fabrication lubrication.

Mr. Alexandroff was for 10 years chief chemist of the Swan-Finch Oil Corp. He is a graduate chemist of DePaul University, Chicago.

Minimum Profits Standards For Service Stations

THE average type of neighborhood service stations that do lubricating jobs and sell tires and other accessories, should have a total operating cost when ALL the expense is averaged against the gasoline gallonage ALONE, of not more than 4.75 cents per gallon. In the case of a large station the total cost so averaged should not be less than 6 cents per gallon of gasoline sold.

This is not the cost of selling gasoline only but it is the cost of carrying on all the services and selling the other merchandise at these types of stations. Against this cost thus measured on the gallons of gasoline ONLY sold, the station owner has the gross income from gasoline, oil, lubricating and greasing jobs and the gross profit from the sale of tires, batteries, drinks and such other accessories and merchandise as he may offer.

Measuring ALL costs against the gallons of gasoline sold at a station may not be scientific accounting but it is accepted as the simplest and most practical way for the average oil marketer to measure the profit—or loss—efficiency of his stations.

However, the more exactly a marketer can break down his costs for each item sold or each job done at each service station, the better he can determine what is profitably done and what should be handled differently or dropped entirely.

Later on in the ever continuing study of MINIMUM PROFIT STANDARDS, NATIONAL PETROLEUM NEWS will work out fairly simple ways for the average oil marketer to make test break-downs of these expenses at a single station, so as to find out whether the time and bother and breakage and losses in handling any one item of merchandise or performing any one service is worthwhile.

At the moment, however, ALL the expenses will be measured in gallons of gasoline ONLY sold, on the assumption that to be a gasoline station MOST of the business done has to be the selling of gasoline and oil. But this rough and ready method of computing costs can easily lead to misconception of the business of a station because ALL of the gross profit from the items of merchandise other than gasoline may be overlooked by the station owner in calculating his comparison of these costs against his gross profit (the total income from ALL sales, less delivered cost of ALL gasoline and merchandise.) Or the station owner may be carrying extra help at a station, or have too much station, for the amount of additional merchandise he is selling or additional services he is performing.

Costs at service stations are probably the most variable of anywhere in the oil industry because of the great difficulty, in fact inability, to insure any steady volume of business. Pipeline and refinery costs can be cut down to a nat's eyelash because the maximum possible number of barrels per dollar of capacity of the line or plant can be kept going through the equipment 24 hours a day the year around. Storage capacity in excess of current daily needs is used to hold any slack in these operations.

But the marketing operation is quite

MINIMUM PROFITS STANDARD
For Neighborhood Station
Gallonage Range 5,000 to 10,000 Monthly

	Monthly Operating Expenses	Operating Cost Per Gallon 5000 Gals. Mo.	Operating Cost Per Gallon 7500 Gals. Mo.	Operating Cost Per Gallon 10,000 Gals. Mo.
Light, heat, phone and water	$35	.7 cts.	.47 cts.	.35 cts.
Rent on land	50	1.0	.67	.5
Interest on investment	33	.66	.44	.33
Wages	200	4.0	2.66	2.0
Insurance	5	.1	.07	.05
Repairs and maintenance	12	.24	.16	.12
Obsolescence and depreciation	46	.92	.61	.46
Shortage and losses	5	.1	.07	.05
Taxes	15	.3	.20	.15
Total	$401	8 cts.	5.3 cts.	4 cts.

MINIMUM PROFITS STANDARD
For Large Station
Gallonage Range 15,000 to 20,000 Monthly

	Monthly Operating Expenses	Operating Cost Per Gallon 12,000 Gals. Mo.	Operating Cost Per Gallon 15,000 Gals. Mo.	Operating Cost Per Gallon 20,000 Gals. Mo.
Light, heat, water, phone	$65	.54 cts.	.43 cts.	.325 cts.
Rent on land	66	.55	.44	.33
Interest on investment	73	.61	.49	.365
Wages	450	3.75	3.00	2.25
Insurance	10	.08	.07	.05
Repairs and maintenance	25	.21	.17	.125
Obsolescence and depreciation	85	.71	.56	.425
Shortage and losses	10	.08	.07	.05
Taxes	25	.21	.17	.125
Total	$809	6.7 cts.	5.4 cts.	4 cts.

different because people who cannot be COMMANDED must be cajoled in one way or another to come and buy gasoline. The bulk plant can be operated on an insured gallonage basis a bit better than the service station, because many stations of company and dealer and many large consumers can be grouped by hours and by days so as to keep the flow through the bulk plant fairly constant.

The service station, however, is about as variable as a restaurant. Probably ALL of the gasoline delivery capacity of the average service station is seldom if ever used. At least for not more than a few minutes stretch at a time. The attempt to fill out this idle time, has prompted service station owners and operators to resort to all kinds of schemes, including price cutting and premium giving.

The same schemes are used by all stores, even the best, although the best do not call it "price cutting" but they offer the fruits of "their exceptional purchases" to entice the customer. The average retail store has a widely varying merchandise cost, due to the circumstances of the individual manufacturer as well as to the quality of his product, on which to base the department's store almost INFLEXIBLE MARK-UP, so that seldom does the store keeper penalize himself for the "wonderful bargains" he offers so frequently.

But the gasoline service station owner has a FIXED base cost of merchandise—gasoline and oil—on which to place his mark-up, so to speak. That is, the cost of the gasoline delivered to him does not vary but the volume that he puts through his place of business does vary his operating cost per gallon.

In order to increase this throughput some station owners resort to all the tricks of the trade but chiefly to GIVING AWAY part of THEIR MARK-UP in the hope that the gasoline gallonage will increase sufficiently to bring their costs down just the amount of their price cutting. Sometimes it works but more often it has not worked.

The tendency of retailers today is to find ways of pushing their retail price on gasoline up rather than to reduce it; to try and get a fair competitive price for the gasoline and then to increase their volume of sales per dollar of station investment and PER HOUR of station operation by selling other merchandise.

While there are a great many factors affecting the business of a station, the fact remains that the station owner has so many dollars invested in ground and building and equipment and he pays out so many dollars a month for wages, light, heat, taxes, interest, depreciation and maintenance, and he must get in enough dollars a month in gross profit from what he does (income less cost of merchandise) to more than cover that expense.

Right here is where the great personal factor comes in. One man can sell only gasoline while another can develop a wonderful business in tires or other accessories, or push a greasing rack or handle a big parking lot. The result is that one man could not run the station on a gasoline margin of 5 cents a gallon, while another man, because of his ability to manage the non-gasoline business at a profit, can make money even if the oil company only allowed 2 cents a gallon.

So that because of this widely varying human factor, together with the fact that each station "is different" and because of the reduced cost per gallon with increased output, a very definite yardstick for service stations is impossible. But the MINIMUM PROFIT STANDARDS given herewith, if carefully studied, by the station owner and operator, will be found excellent guides in the main to tell how a station is getting along.

These cost figures for operating service stations as given above, of 4.75 cents per gallon for small neighborhood stations, and 6 cents for large stations, apply to service stations—that is properties of the drive-in type where the sale of gasoline and oil is pushed, where car lubrication is done, and tires and accessories and specialties sold, but not batteries, or repair work, or parking, or any of the many other lines of merchandise and servicing which are carried on at individual stations.

In accompanying tables are presented NATIONAL PETROLEUM NEWS' Minimum Profit Standards for service stations, these tables being prepared in the same manner in which the Minimum Profit Standards for bulk plants and trucks were arrived at, as published in the last issue.

These service station standards are based on three factors. The first is the investment in the service station property. Here NATIONAL PETROLEUM NEWS secured cost data from many oil companies—large and small—as to the

Investment and Equipment in Service Stations On Which Minimum Profits Standards are Based

Below is listed the investment in buildings, driveways and equipment for the two types of stations on which National Petroleum News Minimum Profits Standards for stations are based.

Investment and Equipment in Service Station on Gallonage Range of 5000-10,000 Per Month

Location—Corner lot approximately 75 by 60 feet, driveway entrances from both streets, land having market value of $7500, rental at rate of 8 per cent, and no land taxes paid by oil company.

Building — Put up by local builder of lowest cost materials, locally available, one-stall lubrication department, no canopy, one pump island, two toilets, heated by stove $4000.00
Drive, stone 800.00
Equipment total 1900.00

Total $6700.00

EQUIPMENT AND INSTALLATION

No.		COSTS
1	Computer pump	$225.00
2	Meter pumps	280.00
1	1000-gallon underground tank	55.00
2	550-gallon underground tanks	60.00
1	Air compressor, one horsepower	175.00
1	Hydraulic drive on lift	400.00
1	Air stand	38.00
2	Flood lights	70.00
4	Lube Hi Boys	100.00
1	Kerosine outfit	30.00
2	Gear oil kits	24.00
	Grease guns	75.00
	Furniture	15.00
	Miscellaneous tools—Measures, funnels, etc.	100.00
	Installation and hooking up tanks	125.00
	Electrical work	125.00
	Total	$1897.00

Investment and Equipment in Service Station With Gallonage Range of 15,-000-20,000 Per Month

Location—Corner lot approximately 90 by 60 feet, driveway entrances from both streets, land given market value of $9900, rent on basis of 8 per cent and no land taxes paid by oil company.

Building—Put up by local builder of lowest cost durable material frame stone brick, size 24 by 48, three lubrication stalls, no canopy, two pump islands, two toilets, heated with hot water circulating system..... $7,500.00
Drive, stone 1,500.00
Equipment 3,200.00

Total investment $12,200.00

EQUIPMENT AND INSTALLATION

		COSTS
2	Computer gasoline pumps	$450.00
3	Meter pumps	420.00
2	1000-gallon underground tanks	110.00
2	550-gallon underground tanks	60.00
1	Air compressor, 1½ horsepower	200.00
2	Hydraulic drive on lifts	800.00
2	Air stands	75.00
3	Flood lights	100.00
6	Lube Hi Boys	150.00
1	Kerosine dispensing outfit	30.00
4	Gear oil kits	48.00
	Grease guns	100.00
	Furniture	100.00
	Miscellaneous tools — measures, funnels	100.00
	Installing pumps and tanks, and hooking up	250.00
	Electrical work	200.00
	Total	$3193.00

Market insurance

Every refiner today would buy market insurance if he could, but nobody sells it

You can't insure your markets, but you don't have to be left out on a limb when market conditions change without notice—as they do You can protect your business

How?

With Dubbscracking

Why?

Because with Dubbscracking:

1—You make the maximum yield of Dubbscracked gasoline—that's always in demand in any market—and at top price

2—You can change your operation as often as the market changes to make secondary products that sell

That is market insurance

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

minimum investment necessary in a station today to allow its operators to meet today's competition. This means modern buildings, with toilets, and modern equipment and enclosed lubrication facilities. Also the investment cost is based on rented property rather than property owned by the oil company. Tables carried on page 26 list the investment in buildings and equipment for two types of stations on which the N.P.N. profits standards are based.

The second factor entering into the Minimum Profit Standards for service stations is the operating cost of the station. Here interest on the investment is included, depreciation and obsolescence on the basis of charging the building off in 12 years, and rent on the land on the basis of 8 per cent of its market value today. The principal factor of course in the operation of the service station is the labor cost.

Here, in the Minimum Profit Standards as set up for two types of stations, hours of manpower necessary to operate the stations have been averaged from oil companies' experience, and a wage rate has been taken which would be low for larger cities.

The third factor entering into the Minimum Profit Standards for stations is the gallonage, which of course is a variable factor. Per gallon costs are shown for various monthly gallonage figures at the stations, based in each case on the operating costs as estimated from the investment and from direct operating expenses.

The Minimum Profit Standards for service stations, as here presented, are tentative only, to stimulate discussion by service station owners and operators, but they do offer a standard or yardstick by which the costs of any individual station can be set up and a study made as to whether, based on its present average gallonage today, its operating costs per gallon are as low as is demanded by the general level of competition in the oil industry today.

Many an individual station, it will be found, will be considered as operating on lower than average costs today because of lower investment in building and equipment, or being charged a nominal rent on land because the owner is holding the property for a real estate investment and desires some occupancy for the present to pay the taxes, or because an abnormally low obsolescence and depreciation charges is made, or for some other reason. Where the station is at present on a leased basis, the lessee operator may not be charging his own salary against labor costs or a son or some relative may be working there and the station charged with only a nominal wage in this case.

However, the oil company or individual owner of the station, or the individual operator, should appreciate that the special advantages in costs that are enjoyed today may not continue and the station be faced to meet today's competition on the basis of today's costs. If the station costs are set up on a basis that shows an unduly low operating cost, or the oil company is itself absorbing in some other transaction part of the actual costs of operating the station, the oil company is itself the party that is harmed most through such methods of apportioning costs.

Taking some examples of monthly gallonage throughput at the two types of service stations shown in the N.P.N. Minimum Profit Standards will show how the individual oil company can figure what an individual station is doing based on present gallonage. It should be kept in mind that gasoline sales, and likewise sales of other products and merchandise and services, varies seasonally. A station averaging 7500 gallons a month may drop as low as 3500 gallons in certain winter months of bad weather and run up to 8500 gallons in the summer touring months. To secure a true picture of the station's operations over any period, its average gallonage should be taken.

The neighborhood station shown in the Minimum Profit Standard table, with an investment of $6700, has a monthly operating cost of $401, on a company operated basis. The experience of many companies seems to be that a station of this type, with a staff of two men or a third man at the most, should sell other services and merchandise to make the station a gross profit of 1.25 cents to each gallon of gasoline sold. Thus it should have a gross profit of 3.5 cents on gasoline sales and the additional 1.25 cents from accessories or a total of 4.75 cents for each gallon of gasoline sold.

Thus, on a monthly business of 5000 gallons, the station's gross profit is $277.50, while its operating cost is $401 and it has a loss of $123.50. Its operating cost per gallon on this 5000 gallons of gasoline business monthly is 8 cents.

On a monthly gallonage of 7500, the station's gross profit, of 4.75 cents a gallon, would total $355.25 and the station would still not be meeting its operating expenses by $45.75. Its operating cost per gallon, however, on this throughput would be down to 5.3 cents a gallon.

On a monthly throughput at the station of 8500 gallons of gasoline, the station's income would be $403.75, sufficient to balance its operating costs and allow it to enter the profitable side of the ledger. Its operating cost per gallon on this volume of business would be 4.72 cents.

On a monthly business of 10,000 gallons this station's gross profit would be $475 and it would have a net profit for the month of $74 and its operating cost per gallon would be down to 4 cents.

What would actually happen—and has happened—in the case of many thousand service stations with gallonage figures in the range discussed here is that the stations have been leased out. Here the picture with regard to the station's operating costs changes somewhat. However, the large items of rent on the land, interest on the investment and allowance for depreciation and obsolescence of building and equipment remain, even though they are carried by the oil company owning the station or leasing it on a long term and releasing it to be lessee-operated.

Many are the terms and arrangements by which the stations have been leased by the oil companies to their operators, the soundest one from the oil company's point of view being one in which the operator pays a rental sufficient to cover the fixed charge the oil company must bear. This includes rent on the land, interest and depreciation. The operator will make some savings in the direct operating charges, where he pays the bills, and he will save in labor costs and, while he will work harder and longer hours himself, by building up the gallonage and the return from other sales the return to himself in profits will often be commensurate with the effort.

Where the station gallonage is at a point where such an arrangement cannot be worked out, the oil company holds the bag on the fixed costs of operating the station, at least until the operator has had an opportunity to see if he can build up the gallonage to the point it will return him a profit.

A great many stations undoubtedly do operate on a gallonage which is too low to meet the actual operating costs. The average gallonage for drive-in stations is estimated to be running now between 5000 and 6000 gallons a month. Soundest operating methods on the part of the oil company would be to close them up for good. Certain factors operate against this, a principal one being that the oil company owning the station realizes that, if it removed from the premises, there would be a good chance of someone else coming in to operate a station there. Also, during the years of the depression, the oil companies have made a conscious effort to carry stations that should be closed to enable the employes or operators there to make a living.

Taking the case of the larger type of station for which Minimum Profit Standards are set up, on 12,000 gallons a month at a gross profit of 6 cents per gallon, the station would do $720 in gross profit, as against $809 in operating expense, a loss of $89 for the month. The station's per gallon operating cost on this amount of business would be 6.7 cents.

On a gasoline business of 15,000 gallons a month, the station's gross profit would be $900, and it would show a net profit of $91 for the month. Its operating cost per gallon would be 5.4 cents, somewhat under the breaking point of 6 cents. On a monthly gallonage of 20,000, the station would gross $1200, giving it a profit of $391. Its operating cost per gallon would be 4 cents.

The figures of 1.25 cents per gallon for a small station and 2.5 cents for a large station for return to the sta-

tion from sales of other merchandise and services, as based on gasoline sales, were taken by NATIONAL PETROLEUM NEWS after studying the data on this subject from large and small companies and from operators of individual stations. They will vary for the individual company and for the individual station. These figures can be set up for the individual station, however, based on average performance, and they are necessary to determine the profit and loss status of the station. While it is not the custom of oil companies to charge any part of station overhead or direct expense to the sale of other merchandise except on lubrication jobs, a study of inventories carried or time given to services in relation to gasoline sales and the manpower required for gasoline and oil sales only will show whether the other items represent a profit or loss to the station.

It seems to be accepted generally that the sale of other items in relation to gasoline sales increases with the manpower used at the station, and that such sales are greater, in relation to gasoline sales, at larger stations than the small neighborhood type. The more attention given to lubrication at the station, the greater also are the sales not only of lubrication jobs but of accessories and other merchandise.

Sales of motor oil at small stations, oil companies say, run at 2 per cent of gasoline business, or they should hold to that factor, and will average a little higher at the larger stations. Thus the return to the station, at a gross margin taken as 45 cents a gallon on motor oil generally in relation to the sale of one gallon of gasoline, was set at 0.8-cent for small stations and 1.1 cents for the larger stations. Sales of lubrication jobs at small stations, taken from oil company data and not based on any arbitrary factor of a lubrication job to so many gallons of gasoline sold, together with sales of tires and accessories at such stations, average 0.45 cent per gallon of gasoline sold. The gross return to the station on a lubrication job was taken as 65 cents, on a sale price of 75 cents for the job, with 10 cents deducted as the cost to the station of the grease used.

For larger stations, an average of the data on sales of other items was 1.1 cents per gallon for motor oil. Sales of tires and accessories ran 0.75-cent to a gallon of gasoline, and lubrication jobs 0.65-cent. These figures add to 2.5 cents, which added to the 3.5 cents margin on gasoline, make the 6 cents average income per gallon of gasoline sold which is possible at larger service stations. The average income for the smaller stations is 1.25 cents return on other items to the gallon of gasoline, and 4.75 cents a gallon, including gasoline.

These figures for return on other products will be exceeded at many stations and they are not up to the quotas set by some oil companies as possible for their service station dealers to achieve. They do not include income at stations from tire repairs, car washing, battery sales, battery charging, spark plug cleaning, parking or any of the other many services and merchandise which are carried at some stations.

There seems to have been no surveys conducted recently by entirely unbiased sources as to the actual cost of marketing gasoline through service stations covering any wide area. A survey made at 118 stations in Detroit last summer on behalf of the Detroit dealers' organization, for use in a court case involving selling gasoline below cost, showed the operating expenses of these 118 dealer stations as being 4.4 cents a gallon based on gasoline sales alone. Gasoline sales averaged 82.76 per cent of total station sales during this summer month. The average gallonage per station during this month was a little under 13,000.

A study of the business of gasoline outlets in Allen county, Ind., (Fort Wayne), made by a government bureau in 1934, showed the following total retail expense in cents per gallon of gasoline sold for five groups of stations. For five stations averaging better than 21,000 gallons a month this expense was 4.08 cents per gallon; for 25 stations averaging better than 10,500 gallons a month, the expense was 6.51 cents per gallon; for 33 stations averaging a little better than 6000 gallons, this expense was 5.38 cents per gallon; for 29 stations doing just better than 4000 gallons a month, the total expense was 7.47 cents, and for 33 stations doing 2300 gallons average per station, the expense was 8.5 cents per gallon.

Lubritorium Adds to Profit Possibilities of Station

POSSIBILITIES for profits from lubrication service exist at the smaller type service stations, where modern facilities are provided. These profits may come through the aid of such facilities in pushing the gasoline gallonage up at the station over the level previously existing, from pushing lubrication itself through sales work so that the proportion of lubrication jobs in relation to gasoline sold is above the general average, and through the sale of other services and merchandise, which can be more successfully done in the lubritorium than along the pump island.

The enclosed lubritorium, properly fitted out with modern equipment for car servicing, is not only a place where greasing jobs are done; but also where the car can be driven, away from the atmosphere of hurry around the pump island and thus more time secured to determine the car's actual needs for other services and merchandise the station offers.

It is generally recognized as good practice now to insist that the car be taken to the lubritorium and put on the lift for an oil change; but many stations will do this work outside, while the car is standing on the driveway and where there is no opportunity to check the transmission or differential or other needs.

It is estimated that not much over 10 per cent of service stations make a determined sales effort to sell lubrication and that, as a result of the oil companies paying less attention to lubrication service in their sales work and advertising than to gasoline sales, the stations today do only 50 per cent of the car lubrication business, whereas a few years ago they had 75 per cent of this business. Their loss of this business has been due to the efforts of the car manufacturers in recent years to stimulate their dealers to go after lubrication business.

The gasoline stations have several advantages over the car dealers in selling lubrication service. For one thing their customers are coming in regularly to buy gasoline and their gasoline purchases are an index to their need for chassis lubrication. The station has its lift and other lubrication facilities where they are before the motorists' eyes. The modern equipment available today has a sales advantage through the showmanship in its display and use at the station, whereas with most car dealers it is placed where this particular advantage cannot be made use of.

In connection with this article there is listed the complete equipment, together with its cost, necessary to give modern lubrication service of the type demanded by competition today, for a one-bay lubritorium operated in connection with an oil company service station. The cost of the building alone to house the lubrication department will vary from $700 to $1000, oil companies estimate. For the smaller amount or not much above that figure the local builder can add a wing for a one-stall lubritorium to the existing station building.

The equipment for a one-bay lubritorium complete, with facilities for testing and charging batteries, testing and cleaning sparkplugs and for other services that can be offered in such a department will cost around $1250 to $1350, depending on the type of lift installed. These figures also include the cost of a new air compressor, which the station will likely need where a lift is operated, without any allowance for salvage of the old compressor.

Thus the cost of the building and equipment may vary from $1950 to $2350. Against the operation of the department should be charged an in-

terest rate of 6 per cent on this investment, part of which at least would be considered by some operators and companies as profit.

Depreciation and obsolescence on the heavy equipment in the lubritorium is estimated by some companies at 8 per cent and on the lighter equipment at 25 per cent and it is general practice with many companies to charge off the building at the rate of 12 per cent. The interest charge on the lower investment would be $117 a year, and on the higher investment $141. The depreciation and obsolescence charge would be $273 a year on the lower investment and $339 on the higher, making total monthly fixed charges against the lubrication department of $32.50 and $40 respectively.

With a small station of the type using a one-bay lubritorium, it is estimated that no additional help would be needed, that through the new department, some of the hitherto unproductive labor at the station could be made productive. Half the pay of one man could be charged to the department, or $40 a month. In addition there would be some increase in the direct operating expense of the station through the lubritorium; more current would be used, more water, cleaning waste and so on. Some companies charge $5 a month of these direct operating expenses to the lubritorium.

Thus there would be a monthly expense of operating a complete one-bay lubrication department of $77.50 or $88 for the two types of operation discussed. As a rough yardstick of lubrication possibilities, many companies say the average should be one sale of a chassis lubrication job to the sale of 100 gallons of gasoline. The gross profit to the station on a lubrication job can be taken as 65 cents, the prevailing price charged the customer being 75 cents, of which about 10 cents is cost to the station of the grease used, it is estimated.

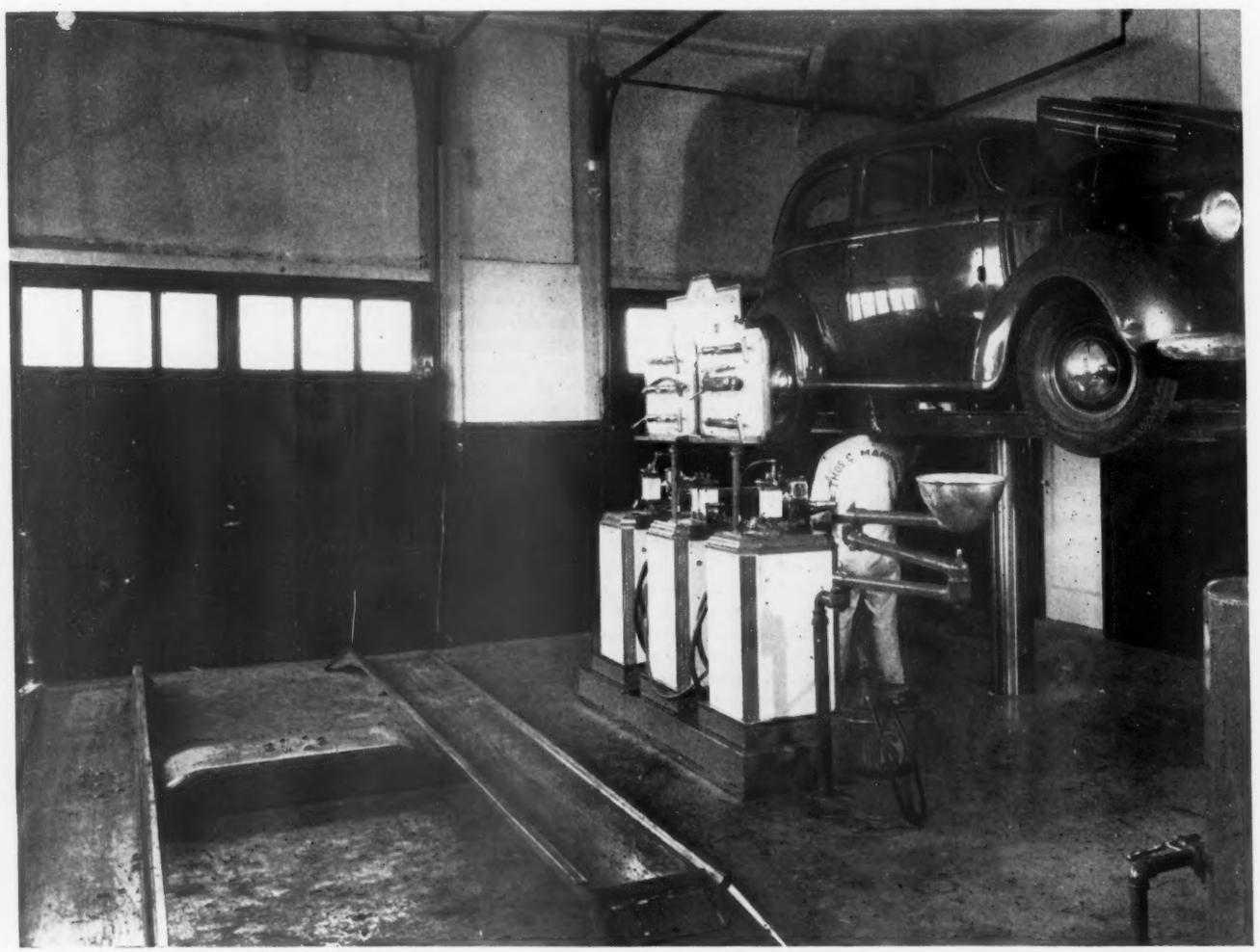
On the figure used today of an average of 5000 gallons of gasoline sales a month by oil company service stations, the revenue to the station from the sale of 50 lubrication jobs would be only $32.50, a long way from meeting the operating costs of the fully equipped modern lubritorium. However, this is not all the story. The sales advantages for other services and merchandise made possible through the operation of the lubritorium would stimulate such sales, in relation to gasoline sales to at least 0.5 cent on each gallon of gasoline sold. On the average of 5000 gallons a month, such sales would add $25 minimum to the revenue of the lubrication department.

The station would not have to get far above the average of 5000 gallons in monthly gasoline sales before the lubrication department began to show a profit, however. On 6000 gallons a month, its revenue from lubrication sales would amount to $39 and the minimum from extra sales of other services and merchandise $30, a total of $69. On 7000 gallons a month in gasoline sales, the revenue from lubrication business, if the general average relationship of such sales to gasoline sales were maintained, would be $45.50 and the revenue from other sales $35, a total monthly gross profit of $80. On a gasoline business of 8000 gallons a month, the lubrication department's revenue, at the average relationship to gasoline sales would be a little over $100, well over the operating expense of the station with the higher investment.

From this point on, as the station's gasoline sales increased or as its percentage of sales of lubrication jobs to gasoline sales increased above the general average, or as its sales of other products and services increased in relation to gasoline sales, the lubrication department's profits would grow.

Oil companies say the one-lift lubri-

The modern lubritorium can be made a source of profits for the gasoline service station, not only through the chassis greasing jobs themselves but also through the sales of additional services and products, the need for which can be determined when the car is on the lift



cation department could handle an average of five jobs a day without additional help being taken on at the station and that the capacity of the lift could be rated at from eight to 12 jobs a day. The figures on the equipment necessary for the complete one-bay lubritorium and its cost are given below.

Complete Equipment For Single Bay Service Station

1 Lift, full-hydraulic, single piston 10⅝" drive-on type	$400.00
Or free-wheel 10⅝" single piston type ..... **or**	300.00
1 Air-operated lift jack to lift dead body weight of car off fittings during lubrication	51.00
1 Two-stage air compressor, 1½ h.p. motor, 20 x 48", 60 gallon tank, 7 cu. ft. per minute	255.00
1 Portable chassis lubricating unit, air-operated, to accommodate 25-pound original grease container	98.00
1 Portable gear dispensing unit, equipped with meter, hose and nozzle to accommodate 25-pound original grease container	98.00
1 Portable hypoid dispensing unit, equipped with meter, hose and nozzle to accommodate 25-pound original grease container	98.00
4 Hand grease guns for utility, water pump, wheel bearing, fiber universal	41.55
1 Spring sprayer	6.00
1 Penetrating oil gun	1.35
1 Fire extinguisher	12.00
1 Waste can	4.50
1 Spark plug tester and cleaner	20.00
1 Complete kit of small tools and wrenches	18.50
1 Storage battery cell tester and battery filler	2.00
1 Curb type garage jack.....	37.50
1 Ceiling reel with quick detachable coupler	40.00
1 Hand type pressure gauge tire inflator	7.50
1 Vacuum cleaner	18.50
1 Air blow gun	2.50
1 Set tire tools	11.30
1 Tire tube tester	3.67
1 Tire tube vulcanizer.....	10.00
1 Battery charger	32.00
1 Gear flusher	15.00
3 Funnels of different sizes..	5.50
3 Oil measures for dispensing motor oil	12.00
1 Portable oil drain	32.50
1 Spring cover lubricator...	22.50
Total	$1356.37
Or	$1256.37

N.P.N.'s Minimum Profit Standards For Nation's Service Stations

The following Minimum Profit Standards, for appearance and cleanliness of service stations the country over, are offered by NATIONAL PETROLEUM NEWS. They have been published in earlier issues in connection with articles and statements from various authorities to bring to the attention of the oil industry the fact that the public is becoming aroused against unclean toilets at stations as possibly unsafe toilets. As a result of this growing public education in toilet and rest room sanitation, an increasing proportion of gasoline gallonage this season will go to the stations which, by their outward appearance, show that their rest rooms and toilets are clean.

For Station Site . . .

No empty cans, rags, or rubbish on drive.

Curb and drive edges clean and whitewashed.

No wet or dried grease or oil spots on drive.

Floodlight reflectors clean, lights in good condition.

Pump island clean and whitewashed frequently.

No discarded cans, pails, or rags on pump island.

Pumps washed frequently.

Pump hose free from leaks and not frayed.

Pump globes and lights in good condition and clean.

Fence, wall, hedge, or garden in well kept condition.

Air hose picked up and in good working order.

Curb and street signs freshly painted and well lighted.

Fill box openings painted and free of dirt.

For Station Building (Exterior) . . .

All unsightly and poorly painted signs eliminated.

Building surface free from splatters.

No chipped or broken exterior wall surfaces.

Roof in good condition.

All empty or unkept cans, barrels or boxes out of sight.

Windows clean.

For Station Building (Interior) . . .

Walls, floors and ceiling clean, with no grease spots.

Office equipment well kept, with no loosely filed papers in evidence.

Manager's desk clean, with no milk bottles, coffee cups, newspapers, rags, lunches, or tools in evidence.

Conservative use of signs, cards and wall charts.

Attendants' street clothing and miscellaneous stock kept out of sight in closet or storage room.

Pit or lift well cleaned after each job.

Lubritorium floor cleaned after each job.

Lubritorium walls, ceiling and floor well painted.

Stock of tires, batteries, and accessories neatly arranged and **Clean.**

Work bench cleaned off after each job and tools put in proper place.

Grease guns in proper place on clean rack when not in use.

High-boys with no oil spillage on top, front or sides.

Container for oily rags and rubbish freshly painted and with a lid or self-closing top.

Waste basket in office.

Comfortable and **Clean** chairs for customers.

Window displays that are timely and not piles of a mixture of winter and summer items.

All miscellaneous items, not necessary to the immediate job of serving customers, out of sight, including such items as brooms, mops, step ladders, and overalls.

Lamp bulbs in good condition and light fixtures clean.

Lubritorium and other service bay entrances unobstructed.

No odds and ends lying around, such as old second-hand tires, scrap parts, junk, or old batteries.

Compressor clean, and located where noise will not interfere with conversation with customers.

For Station Toilets and Wash Rooms . . .

All toilets in **Good Repair.**

Wash bowl fixtures in **Good Repair.**

Toilet and wash bowls **Spotlessly clean.**

Toilet seat freshly painted and clean.

Floors, walls and ceiling clean.

No litter in the rooms.

Do not use rest rooms to store **Anything.**

Rooms and fixtures inspected, **Frequently Each Day.**

Clean rest rooms at least **Once a Day.**

Supply soap and towels (paper towels at least).

Rooms should always **Smell Clean.**

For Personnel . . .

Uniforms and caps **Clean.**

Attendants clean-shaven.

No dirty rags in attendants' pockets.

Minimum Profits Standards For Trucks, Bulk Plants

Below are republished NATIONAL PETROLEUM NEWS' Minimum Profits Standards for bulk plants and trucks which were first carried in its April 13th issue in the N.P.N. editorial campaign to present costs which oil marketing companies must meet in today's competition to assure themselves profits.

They are tentative standards which can be used as a "yardstick" to measure the efficiency in dollars and cents of their own bulk plant and trucking operations, for, regardless as to how big or small the individual company is, or the individual bulk plant or piece of automotive equipment, it is the cost of operating that one bulk plant or delivery truck that determines whether the company is to operate at a profit or a loss.

Special articles appearing also in the April 13th issue described how these NATIONAL PETROLEUM NEWS Minimum Profits Standards were compiled and how they may be used by oil companies.

MINIMUM PROFIT STANDARDS
For Bulk Plant with 40,000 Gallons Storage Capacity

Monthly Operating Expenses for Plant		Based On Throughput of 25,000 Gals. A Month Cts. Per Gal.	Based On Throughput of 30,000 Gals. A Month Cts. Per Gal.	Based On Throughput of 40,000 Gals. A Month Cts. Per Gal.
Light, heat, power and water	$ 10	0.04	0.033	0.025
Interest on investment	15	0.06	0.05	0.0375
Insurance	10	0.04	0.033	0.025
Repairs and maintenance	10	0.04	0.033	0.025
Obsolescence and depreciation	16	0.064	0.053	0.04
Shortage and losses	10	0.04	0.033	0.025
Taxes, license, inspection	25	0.10	0.083	0.0625
Miscellaneous	10	0.04	0.033	0.025
Total	$106	0.424 cts.	0.353 cts.	0.265 cts.

MINIMUM PROFIT STANDARDS
For Bulk Plant with 60,000 Gallons Storage Capacity

Monthly Operating Expenses for Plant		Based On Throughput of 40,000 Gals. A Month Cts. Per Gal.	Based On Throughput of 50,000 Gals. A Month Cts. Per Gal.	Based On Throughput of 60,000 Gals. A Month Cts. Per Gal.
Light, heat, power and water	$ 10	0.025	0.02	0.0167
Interest on investment	25	0.0625	0.05	0.0166
Insurance	10	0.025	0.02	0.0417
Repairs and maintenance	10	0.025	0.02	0.0167
Obsolescence and depreciation	28	0.07	0.056	0.0467
Shortage and losses	10	0.025	0.02	0.0166
Taxes, license, inspection	50	0.125	0.10	0.0833
Miscellaneous	10	0.025	0.02	0.0167
Total	$153	0.3825 cts.	0.306 cts.	0.255 cts.

MINIMUM PROFIT STANDARDS
For Bulk Plant with 75,000 Gallons Storage Capacity

Monthly Operating Expenses for Plant		Based On Throughput of 50,000 Gals. A Month Cts. Per Gal.	Based On Throughput of 60,000 Gals. A Month Cts. Per Gal.	Based On Throughput of 75,000 Gals. A Month Cts. Per Gal.
Light, heat, power and water	$ 15	0.03	0.025	0.020
Interest on investment	36	0.072	0.06	0.048
Wages	125	0.25	0.208	0.167
Insurance	20	0.04	0.033	0.027
Repairs and maintenance	50	0.10	0.083	0.066
Obsolescence and depreciation	40	0.08	0.067	0.053
Shortage and losses	25	0.05	0.042	0.033
Inspection, taxes, license	50	0.10	0.083	0.067
Miscellaneous	25	0.05	0.042	0.033
Total	$386	0.772 cts.	0.643 cts.	0.514 cts.

MINIMUM PROFIT STANDARDS
For Efficient Tank Truck Operation

Comparison of Monthly Operating Costs of a 600-Gallon And a 1000-Gallon Tank Truck Covering 1000 and 2000 Miles

(A composite tabulation based on figures obtained from actual oil company truck operating records)

Items	1000 Miles per Mo. 600-gallon truck	1000 Miles per Mo. 1000-gallon truck	2000 Miles per Mo. 600-gallon truck	2000 Miles per Mo. 1000-gallon truck
Gasoline, oil, grease	$ 21.40	$ 25.80	$ 42.80	$ 51.60
Tires	6.60	8.00	13.20	16.00
Maintenance and repairs	15.00	20.00	30.00	40.00
Insurance	8.20	9.60	8.20	9.60
Driver's wages	100.00	100.00	100.00	100.00
Depreciation	25.00	42.00	25.00	42.00
TOTAL MONTHLY EXPENSE not inc. license, taxes	$176.20	$205.40	$219.20	$259.20
Cost per gallon delivered	.42 cts. (42,000 gallons)	.205 cts. (100,000 gallons)	.52 cts. (42,000 gallons)	.26 cts. (100,000 gallons)
Gallons delivered per mile	42	100	21	50
Cost per mile	17.6 cts.	20.5 cts.	11 cts.	12.9 cts.

Jobbers' Problems Outlined Refiners Urged To Help

Eric V. Weber, Cincinnati, president of Ohio Petroleum Marketers Assn., gives to National Petroleum Assn. his views of how improvement of jobber-refiner relations can be accomplished.

CLEVELAND, April 18.—More harmonious relations between jobbers and refiners can be obtained by an intelligent analysis of their mutual problems, the National Petroleum Association was told at its mid-year meeting here April 13 by Eric V. Weber, Cincinnati, president of Ohio Petroleum Marketers Association, who then gave his views as to how these problems can be solved.

Weber, who has been an independent oil jobber for more than 15 years, owning and operating Eureka Oil Co., deplored the fact that some marketers have rushed to Congress and the state legislatures for assistance. He cited state price posting laws and gasoline grading statutes as examples of how such legislation has had the reverse effect of what was intended by its sponsors.

Refiners themselves are partly to blame for the "destructive strategy" to which many marketers seem committed, Weber told the N.P.A., adding that refiners have been "derelict" in their duty to their jobber customers.

Weber urged that a broad program of public relations be developed to acquaint all within the industry, as well as "the politicians and general public," with the fundamental economics of the oil industry.

"Such a program must of necessity be broad and comprehensive," he explained. "It should not stop until every man who handles a pump hose becomes a source of intelligent propaganda in the industry's behalf."

"It seems to me to be an industrial crime that our sales executives should know so little of our fundamental problems and the inner workings of our industry," the Ohio jobber added.

Weber declared that he was unqualifiedly in favor of orderly control of crude oil production to prevent "ruinously low prices and unprofitable margins."

There are "great possibilities" in the re-establishment of a "true spot tank car market price," Weber said, adding that he readily recalled the time when jobbers purchased at least 50 per cent of their requirements on the open market and were able to operate at a profit. "I believe in this system," he said.

Three specific problems of the jobber, which he laid at the door of the larger companies and urged be remedied, were:

Stop leasing and loaning of equipment, and the practice of leasing a dealer outlet upon a gallonage basis and then returning the stations to the operator for operation.

Stop transport truck deliveries at tank car prices to small buyers not equipped to take car shipments.

Curtail further expansion and eliminate obsolete or unprofitable retail outlets.

Text of Weber's speech follows: "The topic which has been assigned to me, 'As I See the Jobbers' Problems', should not be a difficult one for you to understand because in the last analysis the problems of the jobbers are also the problems of the refiners.

"Contrary to the belief unhappily entertained by some engaged in our business, our problems are so closely related that the welfare of all branches of the industry is vitally affected by the attitude and the performance of any single element therein, whether it be that of production or refining or marketing. Due to this failure on the part of so many of our associates to realize our community of interest, there has developed a certain antipathy between various elements in the oil industry which, at times, seems to threaten a definite line of demarcation between those whom we generally classify as the major oil companies and the other types of marketers.

"To me it seems extremely unfortunate that any controversy should be permitted to arise between the different branches of the industry or between those different groups which may constitute the same branch. Yet it seems to me that the most logical way to adjust any controversy or eliminate any misunderstanding is to analyze the situation, endeavor first to ascertain its causes, and then apply the appropriate remedy.

"I do not wish to give the impression that I have discovered a panacea for all of our problems, but as a jobber actively engaged in the marketing branch of our industry and with a background of many years of association with jobbers and oil men generally, I entertain the more or less modest impression that I have learned something of the attitude and the gen-

Re-establishment of Spot Tank Car Market

"Recently a great deal has been preached and written about re-establising a true spot tank car market price. I hardly need to go into detail regarding this subject since it is a question concerning which the members of this organization are doubtlessly much better informed. However, I readily recall the time when jobbers purchased at least 50% of their requirements on the open market and were able to operate at a profit. I believe in this system. But today many jobbers have abandoned this practice and instead are marketing the advertised brands of various refineries. In order to change our methods at this time would require an almost complete change of the merchandising policies of our industry. In my opinion, the former method has great possibilities."—*Eric V. Weber, before National Petroleum Association.*

eral philosophy of jobbers and the manner in which they hope to find the solution of those problems which are peculiar to their operations.

"Unfortunately, I believe the jobbers in many sections of the country have selected the wrong course in seeking the solution of their problems. For the most part this has been due either to inefficient leadership, or to possibly an entire lack of leadership. At this point, I wish to emphasize, however, that by no means do I place the entire responsibility upon the jobbers for the destructive strategy to which so many of them seem committed. Without hesitancy I accuse the refiners, on whom the jobbers must depend for their supplies, with dereliction of duty to their customers. As refiners and distributors your responsibilities far transcend the mere function of selling petroleum products, whether to jobbers or to dealers.

YOU must bear in mind that this is an immense industry with many and varied ramifications and that there are literally thousands of people engaged in the production, refining and sale of petroleum products. When one contemplates the magnitude of our industry and the important position it occupies in this world, one cannot fail to marvel that we should attempt to function with all of the existing distrust and misunderstanding. I realize that many of our leaders are reluctant to assert themselves and to offer the constructive counsel of which they are capable lest they be misinterpreted in their efforts to contribute something to the task of resolving our problems and bringing order out of chaos. This reluctance or modesty is unfortunate, and as a consequence, conditions threaten to become increasingly serious.

"Today, as never before, those of us who are vitally interested in the welfare of the petroleum industry should calmly and unselfishly analyze our problems and then move courageously and consistently toward effecting their solution. During these times of uncertainty, when so many of our landmarks have been destroyed by the shifting tides of political expediency and economic uncertainty, when one need only to invoke Congressional panaceas to avoid the prosaic task of work, it is probably difficult to outline reforms with any degree of certainty that they will be effective. I often wish it were possible to refer to a polecat by its generic name rather than to refer to it as a wood pussy. However, I shall attempt to deal with a few of our problems as specifically and as frankly as possible, and with due appreciation of the limitations and infirmities of one's personal judgment.

"First, the uneconomic practice of leasing and loaning equipment, with its destructive competitive effects, is again with us. A determined and organized effort should be made within the limitations imposed by law to again establish and conform to those rules which we enjoyed under the lamented Petroleum Code governing the leasing and lending of equipment. A sincere effort in this direction would immediately receive the enthusiastic support of the better element of marketers who, after all, predominate both in numbers and in gallonage.

"Marketers are also gravely concerned over the growing practice of the larger companies in leasing dealer outlets upon a gallonage basis and then returning these outlets to the lessor for operation under one form or another. Many of the smaller marketers feel that they are unable to effectively meet the competition of loaned equipment and leasing of dealer outlets.

"They view these practices as a deviation from the principle of posted prices and therefore feel that they are both justified and compelled to meet this competition by adding an extra cent or half cent to their dealer margin. Those of you who are engaged in distribution, as well as in refining, must surely realize the seriousness of these practices which I but briefly mention.

"The marketers also view with a great deal of concern the growing tendency to abuse the original purpose and intent of truck transports.

IT IS true that the transportation of gasoline by truck trains effects many economies. However, the growing abuse of this system seems certain, in the final analysis, to further demoralize our price economy. Too many of these transports instead of being used to haul gasoline in volume from refineries or marine terminals to bulk plants, are being employed to supply at tank car prices individual customers and retail outlets not equipped to receive tank car shipments. If permitted to continue unabated, this practice will cause serious disturbances and repercussions in the marketing field. Price advantages thus received are being passed on to the consumer in such form as to divert a very considerable amount of gallonage from our service stations.

"The practice of furnishing truck transport delivery to small buyers, together with the existing too wide price differential for ordinary tank wagon deliveries, has caused the railroad sidetrack and cut price operators to reduce their posted prices to a point where the service station price of these operators in many instances approaches or equals the existing tank wagon price. The result naturally is either a constantly increasing diversion of tank wagon and service station gallonage to cut price operators or else a demoralizing reduction in prices throughout the entire territory.

"Of course, there are some who view this as the natural result of evolution or economic adjustments. But in my judgment this cannot properly be termed evolution. It may be distressing enough to be engaged in the oil business, but to be in the oil business and lose money is a calamity which the victims cannot be expected either to enjoy or to applaud. Furthermore, these conditions also cause your own dealers to compete with you since they are forced in self defense to offer discounts below their posted prices as the only alternative to the loss of their business to your tank truck departments.

Too Many Stations

"One of the most serious problems confronting the industry and one of particularly vital import to jobbers and retailers is that of the constant increase in retail outlets, and especially the drive-in filling stations. This is by no means a new question, and it is one with which you are entirely familiar.

"While it is true that the rate of construction of new outlets has somewhat decreased and that the number of new outlets has been somewhat offset by the closing of unprofitable and inefficient stations, yet according to reliable statistics the expansion program seems to continue at a pace far beyond consumer requirements and equally far beyond the dictates of sound business judgment. As we all realize, this process only serves to further reduce or dilute the gallonage per outlet and thereby measurably increase marketing costs. It is suggested that in order to overcome the reduction in gasoline gallonage per outlet, other items of merchandise should be added, such as tires, batteries, accessories, etc. In the earlier days undoubtedly the addition of such merchandising did materially assist in relieving the situation, but today all of us market these items and the result of this highly competitive situation is that we find ourselves burdened with large inventories of merchandise which have a slow turnover, and thus still further increase our marketing cost.

"The answer, of course, is to curtail further expansion of new outlets and to rapidly discontinue and eliminate those outlets which have become obsolete or which, by reason

Public Relations Program

"What we need today in the oil industry is a public relations program that is frank, honest and sincere. Had such a program been in operation during the past few years, I sincerely believe that we would not have been forced to witness the many sad experiences of more recent months. To those who may say that this is all impossible, my answer is that either we must do it or we will have it done for us by the Government."—*Eric V. Weber, before National Petroleum Association.*

MAYBE THIS WILL TELL YOU HOW GOOD IT IS!

Synthetic Tube-
Rubber Covered
Underwriters' Approved

GOODYEAR STYLE B. H. GASOLINE HOSE is made with the highest quality synthetic tube and a tough abrasion-resisting black rubber outer cover. It is reenforced with *three* braids of high tensile cotton cords that give great strength and flexibility. In the middle braid is woven a strand of braided copper wire to provide a static bond.

WHEN Goodyear's Style B.H. Synthetic Tube Gasoline Hose was first introduced one of the larger oil companies put several lengths into test service to compare it with previous service obtained from conventional type hose. All the latter either wore out or failed inside of *five* months. Today—*26 months later*—all the Goodyear Style B.H. Hose is still in service and still in good condition. If you are interested in such exceptional wear, such true economy, write for full particulars to Goodyear, Akron, Ohio, or Los Angeles, California.

THE GREATEST NAME IN RUBBER

GOODYEAR

STYLE B.H. GASOLINE HOSE

of various factors, are no longer profitable. How to organize such a program and prosecute it to a successful conclusion in fairness to all who have a financial interest in its solution without violating the dictates of statutory enactment, is a task, the difficulty of which is apparent. However, I have sufficient confidence in the intellectual capacity of our industry to believe that if a sincere and determined effort is made, we can devise a program which will accomplish some real progress in this direction.

"The importance of this question is illustrated by the growing agitation among organizations of gasoline dealers in many cities for legislation arbitrarily limiting the number of retail outlets for the sale of our products. For instance, The City of Toronto has enacted an ordinance, or by-law as it is termed in that city, fixing the maximum number of such outlets at a figure which equals those now in existence. I leave the question of the constitutionality of legislation of this character to the determination of our legal friends.

"I should like now to rather briefly outline my views on a question of very great moment not only to our industry but also to the general public, as evidenced by debates in the halls of Congress and expressions from public officials.

"Many petroleum marketers have expressed themselves vigorously regarding the subject of production control of crude oil and state compacts entered into by the various producing states for the purpose of maintaining a reasonable ratio between crude oil production and gasoline consumption.

"I wish to state without qualification that in my judgment those who oppose a reasonable and orderly control of production fail to appreciate the destructive and demoralizing effect of great surpluses of crude oil and refined petroleum products. In their opposition to the measures which have been undertaken to maintain a parity between production and consumption they manifest an entirely selfish interest and ignore the greater question of public benefit. When production is allowed to proceed uncontrolled, not only do we waste an invaluable natural resource, but we throw upon the market an enormous amount of distress merchandise whose demoralizing effect can be traced to the gasoline pumps at the retail outlet. Some may temporarily profit through the purchase and sale of this distress merchandise, but just as sure as destiny, in due time every branch of the industry from the producer to the dealer and the public, as well, must inevitably suffer.

"We have all witnessed the results of overproduction and its corrolary of ruinously low prices and unprofitable margins. I therefore urge marketers everywhere, even if they consider merely their own selfish advantage, to support a reasonable, sane program of production control for the sake of sound business. The moment a flood of distress gasoline finds its way into the market, prices decline and with declining prices there follows a reduction in margins. It seems to me utterly illogical for any branch of our industry to clamor for a structure based upon generous or even reasonable margins and at the same time oppose a program of balanced production.

Re-establish Spot Market

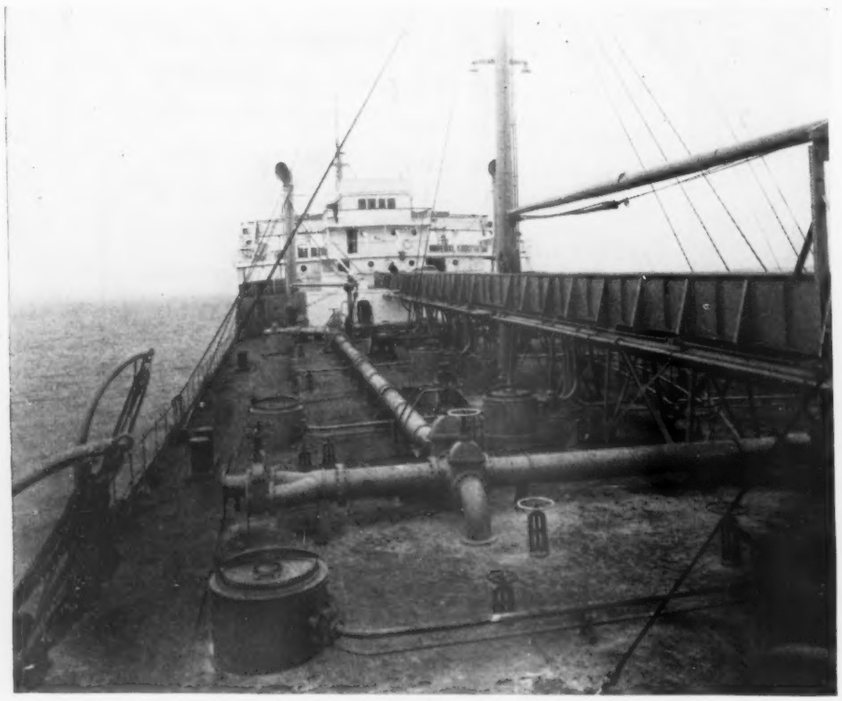
"Recently a great deal has been preached and written about re-establishing a true spot tank car market price. I hardly need to go into detail regarding this subject since it is a question concerning which the members of this organization are doubtlessly much better informed. However, I readily recall the time when jobbers purchased at least 50% of their requirements on the open market and were able to operate at a profit. I believe in this system. But today many jobbers have abandoned this practice and instead are marketing the advertised brands of various refineries. In order to change our methods at this time would require an almost complete change of the merchandising policies of our industry. In my opinion, the former method has great possibilities.

"Earlier in my remarks, I have referred to the dereliction of duty on the part of suppliers and refiners to their marketing customers. I should like to enlarge briefly upon that suggestion.

"I wish to call your attention to the fact that a vast majority of petroleum marketers belong to the type generally referred to as small business men, whose operations are limited to only a few counties within one State and indeed very frequently confined exclusively to a single county. The result is that many of the smaller marketers assume that it is quite unnecessary for them to make any study of the economics of the oil industry. They conduct their marketing operations in the belief that their policies can have no injurious effect outside of their immediate vicinity and conversely, that they will not be affected by the unsound policies of marketers in other areas. They fail to realize that the industry as a whole is extremely sensitive to even the slightest change in policy by any one marketer. Unless we immediately adjust our policies to meet those adopted by our competitor, we become vulnerable.

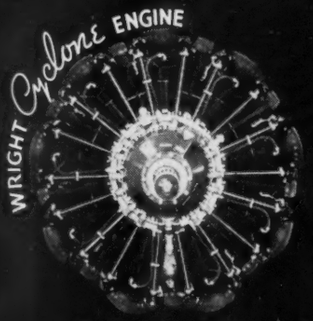
"In recent months the larger marketers have been quick to realize this fact and have promptly taken steps, and properly so, to become competitive. Many of the smaller marketers have viewed these activities of the major companies with extreme alarm. They fail to realize that this is merely the result of the natural force of

World's Largest Welded Ship



Deck view on what is said to be the world's largest welded ship, the S. S. J. W. Van Dyke, the Atlantic Refining Co.'s new 18,500-ton tanker, built by Sun Shipbuilding & Drydock Co. The vessel went into service late in February and is carrying cargo between Philadelphia and Texas Gulf ports. It is the first American-built turbo-electric tanker, and has a cargo capacity of 156,000 barrels. The turbo-electric engines develop 5000 horsepower and give the ship a speed of 13.25 knots. The tanker has an overall length of 543 feet, beam of 70 feet, and a depth of 40 feet

In "Cyclones" . . dag is used!



Well-known to technical men are the stresses and strains set up in the operation of modern airplane power plants. It is, therefore, significant that "dag" colloidal graphite is being selected by an increasing number of engine manufacturers as the auxiliary lubricant to use in combating these wear-producing conditions.

In an industry where positive performance is vital, where "check and double check" is the watchword, materials and equipment accepted must undergo rigid test.

The use of "dag" colloidal graphite by the **WRIGHT AERONAUTICAL CORPORATION** is a powerful testimonial. They find that the graphoid surface gives added protection to the metal parts subjected to high temperatures and heavy pressures. All overhaul and repair jobs are set up and assembled with "dag". Write for technical data.

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economics and sincerely and honestly believe that an attempt is being made to eliminate them or squeeze them out of business. Promptly they become easy prey for agitators and politicians, who point out that what they need is a law, or a veritable flock of laws, to control the operations of their competitors or even eliminate them entirely from the picture. Due to this lack of knowledge, engendered by misunderstanding and mistrust, we today witness as never before the unfortunate spectacle of oil men appealing to Congress and state legislatures for assistance. As an illustration, let me cite the number of States which have enacted laws governing the posting of prices and specifications for petroleum products. Has anything constructive been accomplished by such legislation? In my opinion, emphatically not. On the other hand, legislation of this character has accomplished the reverse of what was desired and anticipated by the sponsors thereof.

Public Relations Program Needed

"What we need today is to divert our attention from the building of more stations and the development of other unsound economic measures to the creation of a constructive public relations program that will educate all branches of the industry, the politicians and the general public as well, in the fundamental economics of our most important industry.

"Such a program must of necessity be broad and comprehensive. It should not stop until every man who handles a pump hose becomes a source of intelligent propaganda in the industry's behalf. It seems to me to be an industrial crime that our sales executives should know so little of our fundamental problems and the inner workings of our industry. Some of you still believe that the important thing is mica axle grease.

"You gentlemen, who are at the head of large organizations with staffs of economists and statisticians at your disposal, should immediately give to the public the benefit of the studies of these specialists in the form of bulletins treating of the economics of our industry. Print them in your house organs, distribute them to your jobbers, your dealers and the consumers whom you serve, to the Chamber of Commerce, the newspapers, the publishers of trade magazines and papers and the various trade organizations. Your group and the American Petroleum Institute can be of great help in this movement.

"Briefly and sincerely, gentlemen, what we need today in the oil industry is a public relations program that is frank, honest and sincere. Had such a program been in operation during the past few years, I sincerely believe that we would not have been forced to witness the many sad experiences of more recent months. To those who may say that this is all impossible, my answer is that either we must do it or we will have it done for us by the Government.

Local Jobber Helps Dealers Sell Motor Tune-Up Service

Pate Oil Co., Milwaukee, has underway a program of retailer help, to make each service station a profitable outlet and to diversify sales so the income of stations will not be entirely dependent on gasoline business.

Goal of the company's sales program is to have 50 per cent of income represented by sales of gasoline and motor oil. The remaining 50 per cent is planned to come from lubrication service, car washing, accessories and mechanical motor tune-up service.

Complete one-stop service is the key to the company's station sales building program. Twenty-four stations in Milwaukee county are Pate customers for petroleum products, also the line of tires, batteries and spark plugs jobbed by the company. Several stations are leased by the company, and in turn are lessee operated; all others are outright dealer accounts. For accessories, other than those handled by the company, each station makes its own buying arrangement with an automotive jobber.

Complete one-stop service means the customary line-up of accessories and services and in addition motor tune-up. Through motor tune-up service the motorist can secure ignition and carburetor service along with lubrication, crankcase draining, gasoline, car washing and accessories. The tune-up starts with a mechanical analysis of the motor. If the test indicates the need of heavy repairs, such as new rings or valve grinding, then the motorist is a prospect for a garage. If the test indicates replacement of parts or adjustments of the ignition or carburetor system, then this service can be obtained right in the station, however, under the Pate Oil Co. program.

Motor tune-up has two advantages for the service station, the company has found. One is the additional revenue. The other is in attracting new customers. One of the dealers reports that about 10 per cent of his total station income is through motor tune-up business—that is for parts and labor. Another dealer reports the percentage is about 12 per cent.

Lubrication is being pushed also as one of the main features of one-stop service. This spring lubrication was the theme of a sales meeting conducted by the Pate Oil Co., to remind dealers of the profits in this service and to emphasize upon them how this part of automotive service has been generally neglected in the service station. Now the company plans to continue bolstering lubrication sales through individual work with the dealer.

To build business for dealers the Pate company has relied on personal work directly with the retailer, rather than offering the dealer the advertising of a national brand. The Pate company has established its own brand, originating the "Hello Neighbor" idea and "Challenge" premium motor fuel, and now has embarked on the program of building up business at the individual dealer outlet.

While aiding the individual dealer the company also is continuing general promotion work on its brands. During the past winter the company sponsored a half hour program of choral music each Sunday evening over one of Milwaukee's larger radio stations. Now that the winter radio season is ended the company will pick up again its newspaper advertising.

Besides general advertising to establish the company's brands, and personal supervision of sales, the Pate company also aids dealers in building a direct mailing list. One dealer, for example, started several years ago with a list of 125 names of motorists living near his station. From a company selling lists, about 200 additional names were obtained. Each year the station's trade territory, on the mailing list, has been extended until this spring the mailing reached about 700 motorists near this station.

To keep mailing lists alive the company runs regular surveys. Four times a year each station takes down the license numbers of all customers for two weeks. By tracing back the license the name and address of the motorist is obtained, and the customer then is added to the mailing list of that station.

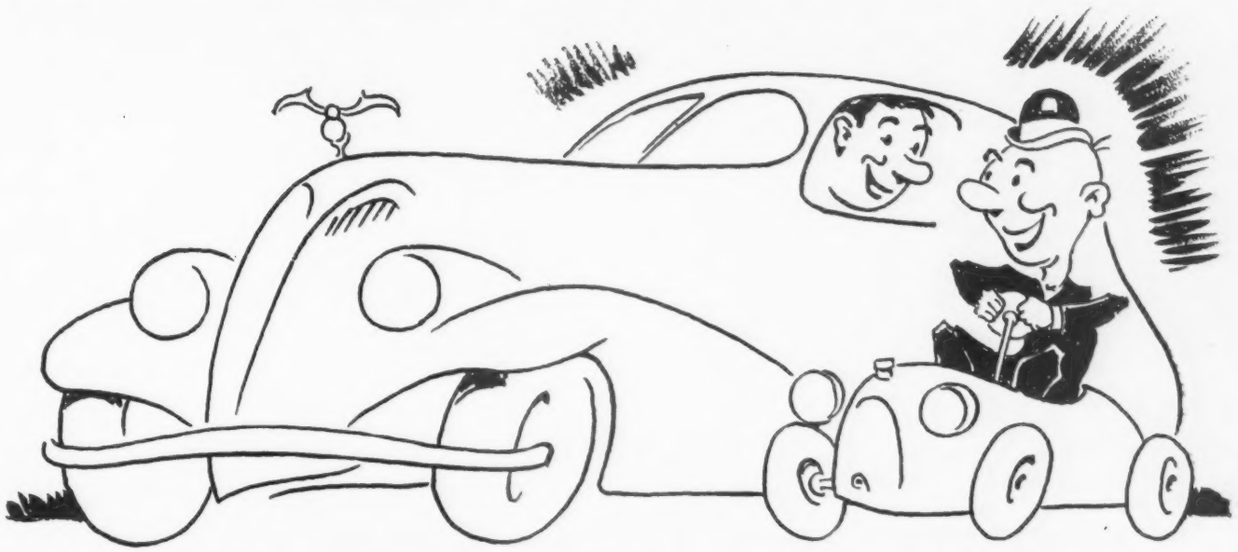
A daily sales record is being worked out by the company so dealers may have a constant reminder of sales in the various departments of their station. With this form the dealer will know from day to day what department may need additional sales effort. The record is to provide a perpetual inventory of petroleum products, and a daily sales record on gasoline, motor oil, lubrication, car washing, tires, batteries, and labor.

Searles on Trip Abroad

NEW YORK, April 16.—F. Gladden Searle, vice president of the Continental Can Co., sailed recently for an extensive business and pleasure trip abroad. He was accompanied by Mrs. Searle.

Their itinerary, after landing at Naples April 2, calls for visits to a number of European cities including Rome, Venice, Vienna, Munich, Berlin, Brussels, Paris, and finally London. They plan to sail from Southampton for the U. S. May 12.

THE RIGHT BATTERY...



FOR EVERY CAR-OWNER

...means more sales with Exide

A BATTERY has to fit the car . . . and the owner's pocketbook too. The Exide line is so well-rounded and complete that you can offer every motorist the right battery for his car at a price that clinches the sale.

That is only one of the many reasons why service stations like Exide. They know that the Exide service equipment not only makes battery service easier and simpler, but helps to build sales as well. They never forget that they have Exide advertising working for them, day and night, with the many Exide sales-promotion features actually bringing customers in.

To help increase their profits, they know they can depend on Exide's Automatic Vendors, which sell the higher-profit Exides *automatically.* And they see the dollars-and-cents advantages of handling a line that always leads in important developments—such as the new Exide NO-OVER-FLO Battery for under-the-hood installation. See your Exide Wholesaler today, or get in touch with us.

Exide NO-OVER-FLO Battery for under-the-hood installation, a super-powered Exide Hycap for motorists who want utmost dependability and long life. Another new Exide development.

THE ELECTRIC STORAGE BATTERY COMPANY
Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto

WHEN IT'S AN EXIDE

YOU *START*

MODERN STATIONS...

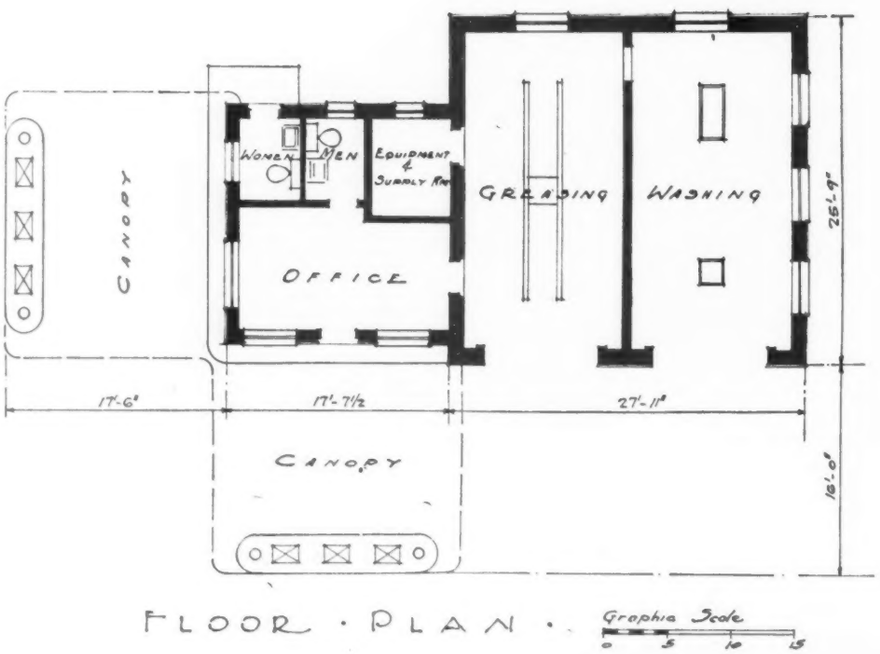
Flexibility In Arrangement Of Canopies, 'Lube' Stalls

This modern styled building used by the Continental Oil Co. is suitable for construction in any section of the country. It will be noticed that the floor plan which is presented contains an extra wing that is not shown in the night illustration. This is because either one or two canopies, and either one or two washing and greasing stalls may be constructed with slight adaptation of the design.

In the floor plan of this Conoco station the lubritorium and the station proper are square units, affording the maximum floor space for materials used. The equipment and supply room is conveniently adjacent to the greasing room. With the door so placed, rather than opening into the station office, the appearance of the station is improved, since the door is usually open. The washrooms in a compact arrangement occupy the remaining corner of the station building.

The station shown in the floor plan can be built for approximately $8500, and fully equipped costs $15,000.

Neon signs provide an effective advertising medium and add to the architectural interest of the design. Other



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features which give the station a luxurious appearance include the cantilevered canopies with aluminum facing; projected steel sash; built-up roof over the office and the washing and greasing room; metal roof over the canopies; washing and greasing stalls lined with salt glazed twin brick, and tile floors and wainscot in the rest rooms.

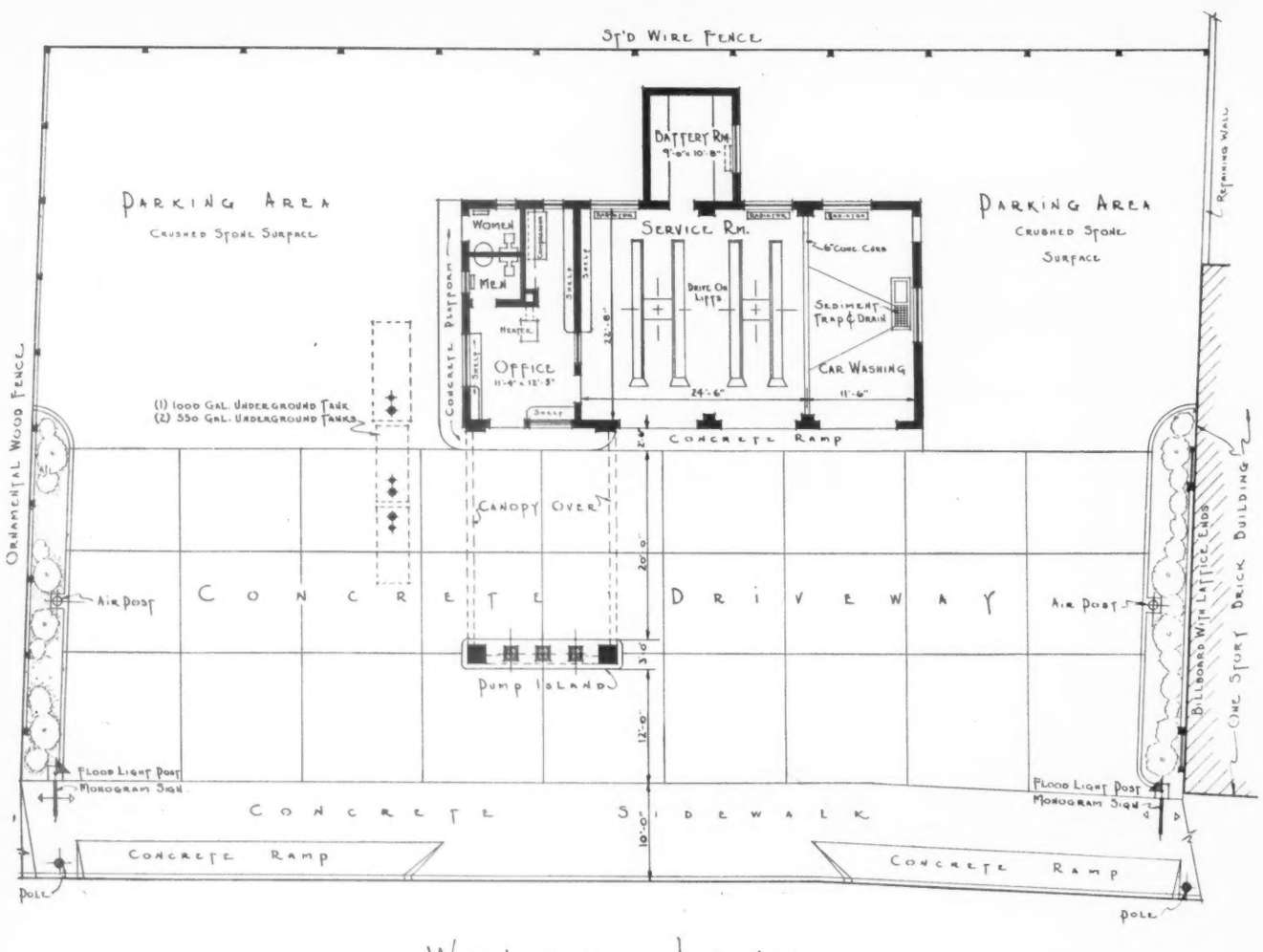
Economy of Building Space Features New York Station

Sinclair Refining Co.'s service station on Wolff's Lane, Pelham, N. Y., is located on an inside lot fronting 115 feet on a very slight curve. A one-story brick store building adjoins the land on the north and the open yard of a competitive service station adjoins the property on the south.

The station property provides a large parking area, paved with crushed stone. From the front wall of the station building to the street the property driveways and sidewalks are of concrete, with pre-formed expansion joints.

The outstanding characteristic of the station is economy of space. No more than the necessary amount is provided for each operation of car service. For example, the toilets are ample in size for convenient use of the rest room

(*Continued on page* 51)



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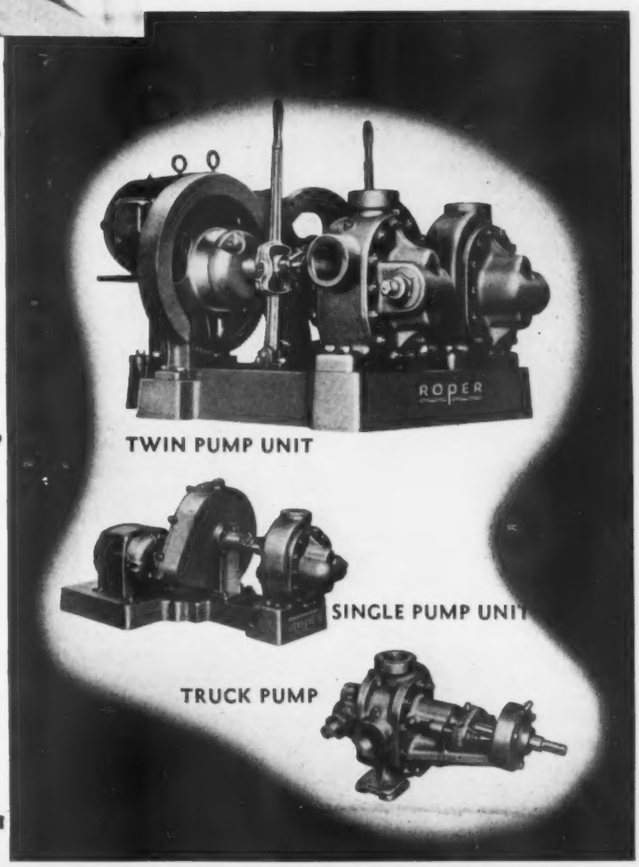

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Detroit Is Scene of Experiment To Govern 'Gas' Price By Law

Dealer Lessees and Independents Bring 21 Suits Against Their Larger Competitors Under Michigan Price Law. Meanwhile, City's Tracksides Flourish and Wide Range in Prices Exists.

By Sheldon D. Clark
N. P. N. Staff Writer

DETROIT

EVER since the enactment of Michigan's fair trade law, Detroit has been the arena of a battle by the city's retail gasoline dealers to hold or increase their gasoline margin, and to eliminate price cutting, by recourse to the courts.

This battle to determine prices by law, despite the attempted prosecution of 21 alleged price cutters, has been unsuccessful to date. That is, practically all the 21 defendants today are pursuing the price policies they see fit and are underselling the price level desired by the members of the Retail Gasoline Dealers Association of Michigan. This association instigated the suits.

Twelve states* in addition to Michigan enacted fair trade laws in 1937, and California and Kentucky already had such laws. Efforts of the Detroit dealers to hold or increase their margin, with a fair trade law as a weapon, are distinguishable from similar efforts of dealers in some other cities in that Detroit has been the scene of only rare and isolated reported violence.

True, in common with many other cities, Detroit had its flurry of blocking of station driveways but, under the leadership of the former secretary of the Michigan petroleum code committee, the Retail Gasoline Dealers Association has preferred to fight its margin battle through the courts.

Preferable as the litigation may be to physical violence, a plethora of the intra-industry suits have choked the dockets of the city's courts. According to the best available count, 21 cases are now pending in various stages through the judicial mill. So great has been the confusion resulting from these cases that the writer was unable to obtain a complete list of them from the prosecutor who is the plaintiff in all of them. After searching two desks, about 14 cases were produced. He said that the file was in the hands of a special investigator. To find records on the remaining suits, the writer tracked down another assistant prosecutor and a variety of bailiffs, clerks and judges in two separate systems of courts.

A number of Pittsburgh and Cleveland dealers have raised their retail gasoline price above competition on the philosophy that the motoring public would be friendly to the independent little fellow, but the Detroit dealers association has relied less heavily on such public sentiment and has instituted suits against trackside operators, chain store outlets, and givers of premiums, who were regarded as cutting prices.

For, similar to the predicament, for example, of Akron (Ohio) dealers last summer, squarely across the path of the independents' desire for a 4.5-cent margin are the cut price stations. There are other factors, but Rankin P. Peck of Detroit, secretary of the Retail Gasoline Dealers Association of Michigan, acknowledged the so-called trackside station was a factor to be reckoned with. His organization

*The twelve are Arizona, Arkansas, Colorado, Maryland, Minnesota, Montana, Nebraska, Oregon, Pennsylvania, Tennessee, Utah and Wyoming. Besides these laws, 16 states have enacted price posting laws. Price posting laws differ from fair trade acts in method and emphasis, but the purposes of both types are very similar.

The Detroit Dealers' Efforts To Enforce Gasoline Prices By Law—in a Nutshell

A total of 21 large distributors and retailers of gasoline are defendants in suits brought by the Wayne County (Detroit) prosecutor's office, largely at the request of the Retail Gasoline Dealers Assn. of Michigan, organization of small independents and lessees, under this state's fair trade law.

1.—All these cases hung fire pending the decision of Recorders Judge Maher in the case of the *People vs. Harry J. Victor*. Victor was found guilty, under the premium section of Michigan's fair trade law, of unlawful giving of premiums with intent to destroy a competitor. This case in serving as a precedent for all the others, is the second one in Detroit in which the trial has been completed. Judge Maher ruled the law was constitutional in a decision April 8, but the gasoline dealer defendant, Mr. Victor, said he would appeal to the Michigan Supreme Court.

2.—In the only other completed case, the Wayne County Circuit Court ruled that the fair trade law, known as Act 282, was unconstitutional. This has not been used as test case, however, since the dealers maintained their case was poorly prepared. Victor in this case was a successful defendant.

3.—Enforcement of the law by Detroit police has been suspended ever since the Argo Oil Corp. obtained an injunction in Wayne County Circuit Court restraining the police and others from ordering down discount signs until the law can be tried on its merits.

4.—In addition to the 21 fair trade law suits, three suits have been filed against major oil and rubber companies alleging discriminatory price policies violating the state anti-trust laws.

All the suits have one philosophy in common; an attempt to govern the gasoline market by law.

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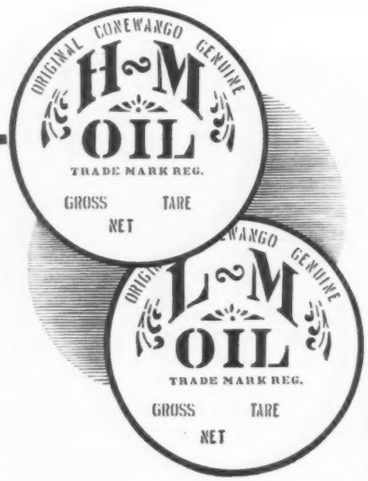

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is responsible for the fact that a number of these operators are defendants in the fair trade law suits.

Out of the 2300 gasoline outlets in the Detroit area, about 2000 are operated by independent dealers or lessees. Under date of March 24, 1938, the price structure characteristic of these station operators was as follows:

Tank wagon price (including 4 cents federal and state tax)	13.6 cents
State sales tax	0.4 cent
Margin	4.5 cents
Retail price per gallon	18.5 cents

A certified public accountant last October made a survey of the cost of doing a retail service station business in Detroit for the Retail Gasoline Dealers Association, and reported operating expenses averaged 4.4 cents per gallon. This survey has since been the basis of dealer justification for the 18.5-cent retail price and the basis for suits brought under provisions of the Michigan fair trade law prohibiting selling below cost.

Whatever may constitute "cost," the fact remains that there are many oil companies in business in Detroit who sell below 18.5 cents. There are 127 price appeal stations, exclusive of those selling major brands, in the Detroit area. Among these operators are:

Charles E. Austin, Inc., selling Joy brand gasoline. On March 24, 1938, according to a survey made of the Detroit area, these stations were selling gasoline on the following price structure:

5 stations, 9 gals. for $1. (11.1 cents per gallon).

5 stations, 8 gals. for $1. (12.5 cents per gallon).

3 stations, 7 gals. for $1. (14.3 cents per gallon).

1 station, 7 gals. for $1.05. (15 cents per gallon).

Puritan Stations, Inc. (Sunny Service), operating 28 stations selling Zip gasoline. Prices noted were as follows:

9 stations, 8 gallons for $1.

1 station, 7 gallons for $1.

18 stations, 7 gallons for $1.05.

Trackside Stations, Inc., selling White Fire and Red Fire gasoline. The survey indicated four stations were selling at 9 gallons for $1 and one station selling 8 gallons for $1.

Duro Oil Corp. operates four stations with trackside facilities in the city. The price on the second-price brand was 8 gallons for $1.

Altogether on the date of the survey 16 stations were noted selling at 9 gallons for $1 or below (equals 10.8 cents per gallon including the state and federal gasoline tax but not the 3 per cent sales tax). There were 82 stations selling at 8 gallons for $1 and below (12.2 cents per gallon as above).

That these stations have been a potent factor in the Detroit market during the period of dealer activity is attested by the state tax reports. Whereas the gallonage increase in 1937 over 1936 for Michigan as a whole was 10.8 per cent†, the state tax reports indicate the following gallonage increases, in percentage, for a sampling of outstanding operators:

Name of Company	Increase '37 over '36
Duro Oil Corp. 4 stations, 8 for $1	20.6%
Bulldog Oil Co. 2 stations, 9 for $1	74.4%
Sucher Bros. 4 stations in 1937, 2 stations in 1936. 7 for $1	187.0%

These percentages indicate the importance of a low price to the motorist, particularly under economic conditions such as have existed in Detroit in recent months.

In addition to the low price operators selling their private brands of gasoline, other factors in the retail gasoline market in Detroit are rubber and auto supply stores selling advertised major brands of gasoline quite commonly at two cents below a 18.5-

†Revised. American Petroleum Institute records percentage at 11.53.

Guepin Made Director Of Shell Oil Co.

LOS ANGELES, April 11.—Election of F. A. C. Guepin, newly appointed executive vice-president, to the directorate of Shell Oil Co. and subsidiaries, was announced recently by S. Belither, president.

Mr. Guepin, who became executive vice-president of the Shell west coast company last November, will hold a similar executive position and serve as a director of Shell Oil Co., Inc., Shell Oil Co. of British Columbia, and Gasco Motor Fuel Co.

Guepin joined the Shell group in 1928. He came to San Francisco from New York and has had international experience in petroleum production and marketing.

cent price. The largest of these are as follows:

Langer's Auto Supply. Operates five very large stores handling scores of automotive items. Sells a major brand gasoline.

Rantanen & Bicknell. Four outlets selling a major brand gasoline.

Liberty Service Stores. Three outlets selling toys as well as auto accessories and tires. Sells Liberty gasoline, a private brand, but in the same category as the other stores by virtue of large operation, particularly in sales of accessories and of tires and tubes. In addition to these, there are four other big operators, each selling a major brand gasoline:

James J. Bright & Son.

Firestone Auto Supply & Service Stores.

Ned's Auto Supply Co.

Stark Hickey, Inc.

There is considerable controversy over the question of why the stations in the categories of those listed above undersell the individual independents and lessees. Harry J. Victor, partner in the Liberty Service Stores, perhaps spoke for other large operators when he said that there was no justification for assuming his costs were anywhere similar to the costs established by the dealers survey. He sells in large volume and he said his costs are distributed over literally scores of items. (Victor was found guilty of violating the fair trade law by Recorders Court last week. This case is discussed fully below.)

The position on the other hand of the Retail Gasoline Dealers Association of Michigan, which lists on its rolls about 1800 dealers, is best stated by a factual chronology of events in Detroit, since the organization was formed slightly more than a year ago at the beginning of 1937.

The only paid officer of this organization of independent dealers and lessees is Rankin P. Peck, former state secretary of the Michigan petroleum code. He said that the association was built from a handful of 15 members to a total membership of about 1800, of which from 1200 to 1400 are in good standing. This means they pay dues of $1.50 per month. The income is used to defray cost of litigation, Mr. Peck's salary and all the customary expenses of an association. In answer to allegations that the dealer association was "a good thing for the secretary", Mr. Peck said that he started at $50 a week and that, in the early days, he defrayed many expenses out of his own pocket. Later his salary was advanced to $500 per month. Since the recession he has taken a cut to $300, he stated. He said he forewent a lucrative manufacturing business (towel cabinets) because he had felt since the death of the oil code a job was half done.

"I often heard the complaint during the code days," Peck said, "that we could do a lot 'if there was only a law.'" Consequently by July of 1937 a fair trade law was drafted by an attorney at the instigation of the Retail Gasoline Dealers Association of

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Michigan and passed by the state legislature.

On the statute books as Act No. 282 of the Public Acts of 1937, the law affects only the baking and petroleum industries. Like similar laws in other states, Act 282 prohibits giving premiums, selling below cost "with intent to injure or destroy a competitor," and giving secret discounts. Conviction of violation of the law subjects the offender to a maximum fine of $5000, or one year's imprisonment, or both.

Attempted enforcement of this law got under way on Nov. 10, 1937, when Detective James Bennett of the Special Investigation Squad of the Detroit Police Department and detective assistant, made a tour of Detroit gasoline stations and filed reports on 13 stations within a week with the Wayne County (Detroit) prosecutor's office. These reports, which subsequently resulted in issuance of warrants and arraignment of the defendants, were all very similar. A typical one was as follows:

Date: Nov. 16. 1937.
Officer: James Bennett.

"I purchased 6 gallons of gasoline for $1 (16.5 cents per gallon) on Nov. 16 at Sucher Super Service, 7 E. McNichols Road. I asked if the station was giving discounts and attendant said it was giving discounts by selling at the above price."

Defendants: Sucher Super Service and Bernard Sucher, 7 E. McNichols Road.

Complaining witnesses: (Here follows the names of the assistant detective and two nearby dealers who alleged that the price policies of the defendant had resulted in injury to their business.)

On Nov. 22 and 24, 1937, some dozen defendants, either retail gasoline dealers or officers or proprietors of large tire and accessory stores, were arraigned in Recorders Court in answer to criminal warrants charging selling below cost with intent to injure a competitor in violation of Act 282. About one-half of these defendants were the tire and accessory outlets selling at 16.5 cents mentioned above.‡

Following the arraignment the cases have been postponed from time to time and at present stand adjourned until a future date. This has been done, pending the decision by Recorders Court Judge John J. Maher on the constitutionality of the fair trade law, who upheld the constitutionality of Act 282 in a decision April 8 in the case of the *People vs. Harry J. Victor*. This is the only case out of the 21 that has actually gone through trial, except one chancery suit, described below, in which Victor was likewise a defendant.

One of those named in the November warrants has never been arraigned. As president of the Argo Oil Corp., Roy R. Fisher, president of the National Oil Marketers Association, was named in a warrant on charges similar to those against the others. Fisher said he discovered this by reading the newspaper one morning and was at his office for 12 days awaiting for the officer to come and get him, an event which never took place. His remarks were similar to those of other oil men named in the fair trade suits:

"I was charged with selling below cost, but I don't know how we could ever have built the Argo Oil Corp. (300,000 gallons yearly) by selling below cost. Everybody was discounting openly after the Michigan fair trade law went into effect, so we met competition. On Nov. 20, 1937, I was indicted and cops came around to my stations and ordered attendants to take down the discount signs."

Mr. Fisher referred to a drive by Detroit police, conducted at the request of the prosecutor's office, ordering down discount signs. Citing countless harassments against his places of business, Fisher obtained an injunction from Wayne County Circuit Judge Guy A. Miller against the police department, prosecutor's office and the Retail Gasoline Dealers Association of Michigan. Thus he was defendant and plaintiff at the same time, a circumstance made particularly easy because the circuit court, a creation of the county government, and the Recorders Court, a creation of the city government, have equal jurisdiction within the city proper.

Out of all those arraigned, so far as the records indicate, only one case reached the next stage. Stark Hickey, executive of Stark Hickey, Inc., was examined before Recorders Judge Donald Van Zile in January and February, 1938. Under Michigan law an examination is similar to a grand jury proceedings. Under the examination, the examining officer, who is a court judge, either finds that a crime has been committed and there is probable cause that the defendant was connected with the crime, or dismisses the defendant. Examination of Mr. Hickey was interrupted once to make way for a murder trial, again because an attorney was absent from the city, and now hangs fire pending the aforementioned case of the *People vs. Harry J. Victor*.

In addition to all the suits charging selling below cost, another series of suits has been brought under Section 6, the premium section, of Act 282. This section prohibits the given giving of premiums and reads:

"Any person doing business in this state and engaged in the production, manufacture, distribution or sale of bakery products or petroleum products, who shall, with the intent to injure or destroy a competitor, give, offer to give or advertise the intent to give away any commodity for the purpose of promoting the sale of any other commodity, shall be deemed guilty of a de-

‡The 12 defendants are the companies and the officers individually. The companies named were Langer Auto Supply, Marvin Goldberg, Shamrock Service Station, Citrin-Kolb Oil Products Co., Firestone Auto Supply & Service Stores, Michigan Automotive Salvage Co., Gorman-Rubens Auto Supply, Log Cabin Service Station, Ned's Auto Supply Co., Sucher Bros., James J. Bright & Sons Co., and Stark Hickey, Inc.

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structive trade practice, which is hereby prohibited and declared to be unlawful."

The information in each of these cases is similar to all other cases. One affidavit upon which the charge was based, for example, reads: "Aug. 19, 1937, Arthur E. Jeffers, 3105 Gratiot Ave., (a dealer) gave away one cup to James Dooley." Dooley is a city detective.

Harry J. Victor, a partner with Aaron Silverman in operating the three Liberty Service Stores, whose case is serving as a precedent for all the other cases, has faced court action before because his firm merchandises with premiums.

During the days of the NRA oil code he was cited for giving premiums and the code authorities obtained a restraining order against Victor from the U. S. District Court for Eastern Michigan. Failure to stop giving away premiums subsequently resulted in citation for contempt of the court.

The case that is serving as a precedent for all others, the *People vs. Harry J. Victor,* was decided by Recorders Judge John J. Maher April 8 against the defendant. In his decision Judge Maher took exception to claims of the defendants that the law was (1) arbitrary and discriminatory, (2) that the testimony does not prove intent to injure the defendant's competitors, (3) that the sale of petroleum products does not involve health, morals, safety or public welfare, (4) that the law operates to stifle competition and that (5) the law violates the due process of law provisions of the state and federal Constitutions.

On the first point, he cited the case of *Kelley vs. Judge of Recorder's Court* wherein it was held that,

> A statute does not violate the equal protection clause of the Constitution merely because it is not all embracing, and that a state may properly direct its legislation against what it deems evil *without covering the whole field of possible abuses.*

The court declared the sale of gasoline within the public interest, so that public welfare is involved. It held it was not within the providence of the courts to question the propriety or wisdom of the legislature, and if the legislature had seen fit to correct abuses in the petroleum industry, such was within the police power.

Judge Maher held the practice of giving of premiums, if continued long enough, would eventually eliminate many competitors and thus tend to promote monopoly. Since Victor freely admitted the fact of his giving of premiums, the court ruled that the perpetrator of a voluntary act is presumed to be responsible for the results or consequences of the act. Therefore the element of intent to injure or destroy a competitor may be implied.

Each and every one of these points had been reviewed by Judge Callendar, however, in a previous case, very similar in nature, brought also against Mr. Victor before the Wayne County

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Circuit Court. Judge Callendar's opinion, almost point for point, was diametrically opposed to that of Judge Maher.

Thus suit was an action in chancery (filed Aug. 30, 1937) before the Wayne County Circuit Court. Plaintiff was the Michigan Gasoline Dealers Union, Local No. 1, predecessor to the present retail association, which charged Victor and Silverman with giving premiums in violation of Section 6 of Act 282. Circuit Judge Callendar ruled that the section was unconstitutional.

THE case did not end litigation under the act as a whole, however, nor even under Section 6, since the retailers felt their case in *Michigan Gasoline Dealers Union, Local No. 1 vs. Harry Victor and Aaron Silverman and the Liberty Service Stores* was not adequately prepared, according to a defendant attorney.

Be that as it may, the court reviewed a number of previous citations in declaring Section 6 unconstitutional. First, Judge Callendar ruled, there was no proof that giving of premiums was necessarily with any intent to destroy a competitor. Of course, he said, it is the desire of any and all business men to secure business from a competitor. The court held that Act 282 violated the due process clause of the Constitution.

The court commented that singling out the bakery and petroleum industries was an arbitrary distinction, not a substantial distinction germane to the purpose of the law.

Further, the court said, that the party must be able to know in advance whether it is a criminal act or not, that an act of giving premiums is destroying a competitor only by inference, and therefore Section 6 is repugnant to Section 16, Article II of the Michigan Constitution.

The judge's opinion expressed disapproval of the philosophy of the law and said that the remarks of the New York Court in the case of the People vs. Gillson (109 N. Y. 389) might well apply in the Detroit case. He cited the opinion of the New York court which said that the New York act is "evidently of the kind so frequent of late . . . to protect some class against the fair, free and full competition of some other class, the members of the former class thinking it impossible to hold their own against such competition and therefore flying to the legislature."

In conclusion the court said that it had not been established in the case under review that the defendants were violating Section 6, of the Michigan act (prohibiting the giving of premiums) and that in any event Section 6 was null and void, being repugnant to the due process sections of both Federal and state constitutions and to the equal protection clause of the Federal Constitution.

The conflict in these two opinions can only be resolved by the Supreme Court appeal. Meanwhile throughout the litigation Liberty Service Stores offered premiums to customers.

Company officials said they had not definitely determined whether or not they would continue giving premiums, but were still doing so a week after their court defeat.

The prosecution of the 21 trade law suits has fallen on the shoulders of Wayne County Prosecutor Duncan C. McCrea, who has delegated the task to Assistant Prosecutor Paul B. Mayrand. Mayrand was admitted to the Michigan bar in 1922 after studying law at a night law school. He was engaged in private practice until appointed by McCrea three and one-half years ago.

WHILE Mayrand has supervision of the oil prosecutions, assisting him is Assistant Prosecutor Ralph Garber, who is giving his attentions to three cases brought Feb. 19, 1938.

"Fighting oil companies is right down my alley," said Garber, who explained that his father, Dr. James Noble Garber, had successfully sued the Standard Oil Co. back in the early days to get the company to drill on his Ohio farm. Proceeds from the oil wells subsequently schooled the younger Garber, he stated. A former partner in the real estate business embroiled Garber in a suit. Coincidentally he noticed a newspaper advertisement reading "Learn Real Estate Law," enrolled in the school, and was admitted to the bar

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Ocean Terminals: Baltimore, Md.; Tiverton, R. I.; Dorchester, Mass.; Carteret, N. J.; Edgewater, N. J.; Glastonbury, Conn.; Philadelphia, Pa.

in 1931. He has been an assistant prosecutor since 1934, and was transferred from homicide cases to prosecute oil litigation.

The three cases under Garber's tutelage were not brought under the fair trade law and should not be attributed, he said, to the instigation of the dealers' association, but were rather the idea of Prosecutor McCrea. Nevertheless, the three cases are part of the retail gasoline litigation and fit into the philosophy of the dealer association secretary. Both the secretary and the prosecutor told the writer that they believe the major oil companies have sold at lower prices to certain accounts in unfair discrimination against the majors' own independent dealers and lessees.

Thus the latest of the court cases involve The Texas Co. and the B. F. Goodrich Co., the Gulf Refining Co. and Goodrich, and the Standard Oil Co. (Indiana) and the Citrin-Kolb Oil Products Co., Stanolind jobber. Warrants were issued after charges on five counts alleging unlawful conspiracy in restraint of trade. The companies were granted by Recorders Judge John P. Scallen a request for a bill of particulars and examination of the defendant companies has been set for June 21, 1938.

Meanwhile as the dealers fight their legal battles slowly through the courts, gasoline continues to be sold at a variety of prices below 18.5 cents per gallon, both by lower posted prices and premiums. An editorial advocating that dealers not fear the "chiseling dealer," in the March, 1938, issue of the *Retail Gas Dealers News* (organ of the Retail Gasoline Dealers Association of Michigan), concluded:

"Much of the decrease in gallonage can be seen in the figures of city, state and federal bureaus. Car licenses are fewer, street car revenue is up and welfare rolls are greater—all of which has a direct bearing on the retail gasoline trade. Gasoline tax collections are lower by more than 8 per cent throughout the state while administration officials admit a higher percentage of reduction in manufacturing areas.

"There is less gasoline being sold in Wayne County!"

The editorial was headed, "Why Gallonage is Down."

Economy of Building Space Features New York Station

(*Continued from page* 42)

facilities, but no excess space is provided. The office is sufficient for conducting the business and displaying a reasonable stock of miscellaneous merchandise, but there is no loafing space. The workroom is adequate in size for the business conducted, but there is not a square foot wasted.

The building has three service stalls, the two nearest the office being equipped with drive-on lifts for lubrication service, and the third stall farthest from the office being for washing only. The latter stall is separated from the others by a raised curb and a curtain. It is of interest to note the considerably greater space between the center of the lift nearest to the office and the office wall, than from the center of the lift to the center of the pier in the other direction. This added space provides room for containers and equipment.

The building walls are of common brick 8 inches thick, painted white outside and aluminum inside.

The battery service room is completely separated from the workroom, and is equipped with a large roof ventilator to remove gases. Heating is accomplished by cast-iron, unjacketed boiler in the office, and ordinary cast-iron radiators in toilets and along the back of the work stalls, the circulating medium being hot water. The storage space and walls of the workroom are equipped with extensive shelving for storage of canned oils, greases, and miscellaneous merchandise.

The three overhead doors are 8 x 8 feet. It is not considered that any larger doors would serve any purpose, since the ceiling height in the stalls would not be sufficient to accommodate cars on a lift which could not get through an 8-foot door. The canopy front to back is wide enough to accommodate easily two cars, so that one car can be standing in front of the office without interfering with serving a second car at the pumps. Trucks are served on the outside driveway only, in front of the canopy.

The unusual placement of underground tanks is due to a local ordinance requiring a minimum distance from a property line, and also due to the fact that all excavation on this lot was in solid rock. The tank line-up shown permitted following a rock fissure for economical excavation.

The yard lighting is accomplished by a large floodlight on the front property line at each extreme side of the property, these floodlights being placed on an extension of the pole used to support the hanging monogram signs. The small reflectors which illuminate the monogram sign also illuminate the entrance and exit ramps. The central portion of the drive is illuminated by the usual ceiling lights under the canopy.

S.O. Kentucky to Build Barge Port in Florida

LOUISVILLE, Ky., April 18.—The Standard Oil Co. of Kentucky, it was announced recently will construct a $250,000 barge terminal at Pensacola, Fla.

Two new 10,000-barrel barges will carry petroleum products to the new terminal via the inland waterway coastal canal from the Baton Rouge (La.) refinery of the Standard Oil Co. of Louisiana. At present Standard of Kentucky's bulk plant at Pensacola is served by railroad, a haul from Baton Rouge of 318 miles.

The barge terminal will afford lower transportation costs to Standard of Kentucky in both shipping products from the refinery to Pensacola and in distribution of products from Pensacola through southern Alabama and southwestern Florida. The terminal will affect particularly Standard's ability to supply government requirements in this area, including the Pensacola air base.

Six acres of land have been leased by Standard from the St. Louis and San Francisco Railroad for the terminal. Storage capacity of the terminal of 20 tanks will be as follows:

	Barrels
Regular gasoline	30,000
Aviation gasoline	15,000
3d grade gasoline	4,200
Kerosine	4,200
Diesel fuel	10,000
Bunker C fuel	30,000

Bunker C fuel will be stored to fuel coal and lumber ships now calling Pensacola in transference of freight to and from the St. Louis and San Francisco Railroad.

In addition to supplying government needs at Pensacola, the new terminal will be in a position to serve government requirements at points in Alabama and Western Florida as far north as the Tennessee Valley.

With the cheaper water haul to Pensacola from Baton Rouge, Standard of Kentucky will be able to supply gasoline to Alabama government destinations in competition with land grant railroads, officials said.

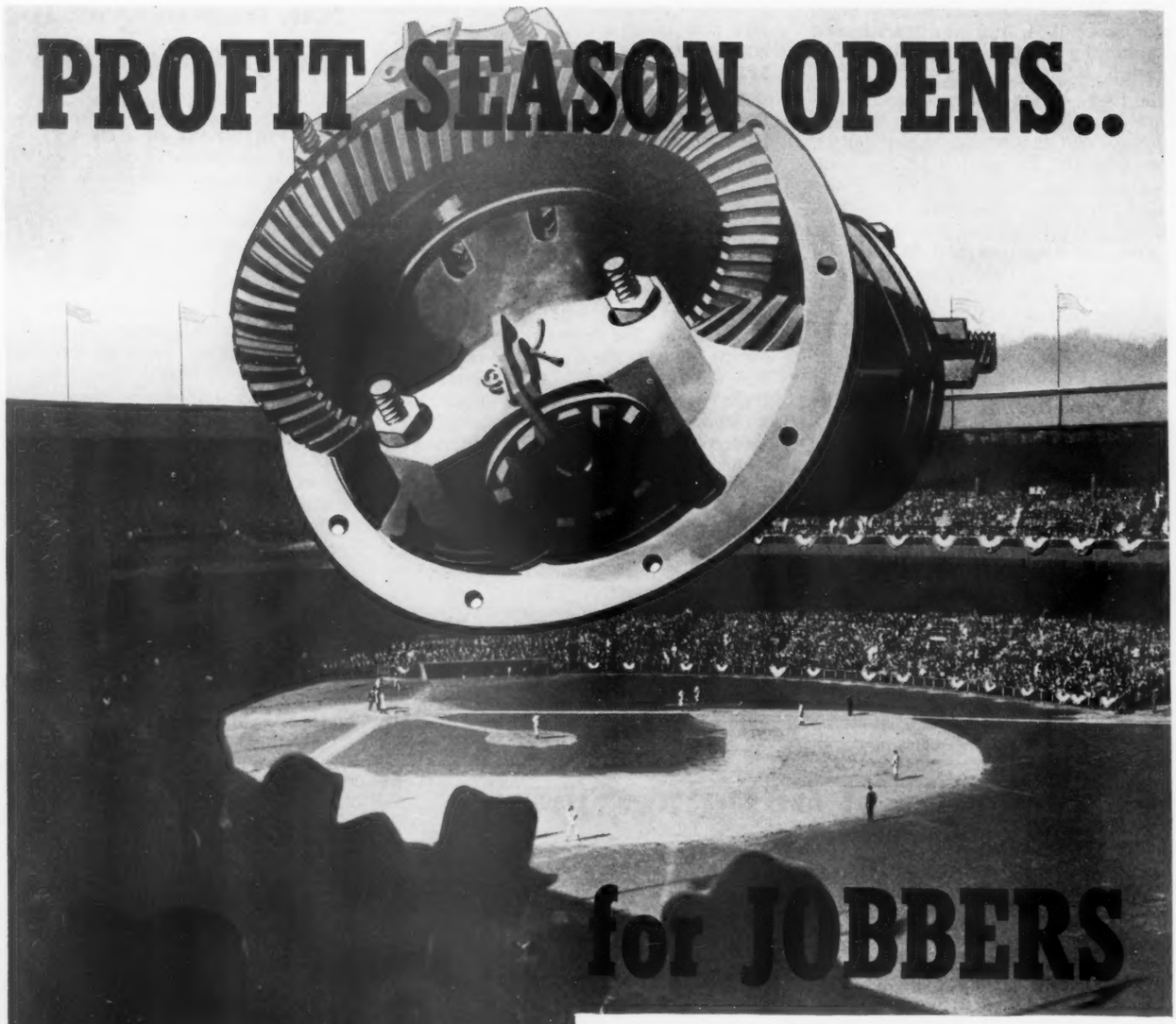
At present the Pan-American Petroleum & Transport Co. and the Shell Petroleum Corp. also operate bulk plants at Pensacola.

NEW PUBLICATIONS

Origin of the Shoestring Sands of Greenwood and Butler Counties, Kansas. By N. Wood Bass, U. S. Geological Survey. Published as Bulletin 23 of the Geological Survey of Kansas.

Through cooperative arrangement between the U. S. Survey and that of Kansas, Bass conducted an investigation of an area that has been important in Mid-Continent production for some 15 years. In Greenwood, Butler and adjacent counties, oil occurs in numerous "shoestring" sands—long, usually narrow, strips arranged en echelon. The report is illustrated with numerous maps and other drawings.

PROFIT SEASON OPENS..



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SOLD UNDER ITS OWN OR PRIVATE LABEL

WHEN crowds start packing the stands, cars start jamming the highways. . . . The big profit for jobbers is on!

This year's heavy traffic season has new meaning for jobbers. Now—for the first time—they can cash in to the fullest on the rich extreme pressure lubricant business. Car manufacturers no longer recommend rear axle servicing only with their own lubricants and through their own service departments. They have found from experience that certain hypoid lubricants marketed by jobbers meet all their requirements. The bars are down.

Recognized best seller among these recommended lubricants is Penola Expee Compound. With by far the greatest acceptance among E. P. lubricants, it's a proven money maker for jobbers . . . More than meets every specification. . . . Needs no stirring before using. Keeps body at all temperatures and speeds.

Make this big motoring season the most profitable you ever had. Cash in on the crowds. Be prepared with Penola Expee Compound. Write Penola today for details.

Penola Inc., 30 Rockefeller Plaza, New York City

Formerly Pennsylvania Lubricating Co.

Markets

At A Glance . . .

MID-CONTINENT: Farm activity increases tractor fuel demand.
MID-WESTERN: Low octane gasoline offered 0.125 cent lower.
EASTERN: Independent suppliers advance gasoline at N. Y.
PENNSYLVANIA: Further declines recorded in lube prices.
GULF: Ten to 12 cargoes of Bunker C reported sold.
CALIFORNIA: Offshore demand light; local prices easier.

Mid-Western

N. P. N. News Bureau

CHICAGO, April 18.—While more favorable weather prevailed in the Mid-western area the past week, movement of gasoline continued to be reported below expectations.

Low octane gasoline was quoted 0.125 cent lower by several sellers and all grades of gasoline were offered more freely. Toward the end of the week a slight improvement in demand was reported but prices generally remained unchanged.

Demand for straight run gasoline continued active, Michigan refiners said. In some cases they indicated a shortage of supplies. Prices for this grade generally continued steady. Higher octane gasoline was also actively sought, refiners said, but inventories of these grades were said to be more substantial.

Kerosine movement in the Chicago area continued below general expectations, sellers indicated. Two local refiners, however, reported good demand for this product. Prices continued steady.

Recovering from the effects of the recent freight rate increase and inclement weather, Michigan kerosine was said to be commanding more favorable trade attention. Shipments of range oil eased off considerably, majority of Chicago sellers said.

Coastal

N. P. N. News Bureau

NEW YORK, April 18.—Activity in Bunker C fuel oil in cargo lots for foreign movement featured trading at the American Gulf the past week.

Reports were that 10 to 12 cargoes of this fuel had been purchased from Gulf suppliers. Reports as to prices paid varied considerably, ranging from 70 to 75 cents a barrel. Most observers, however, believed that the latter price had been paid for most of the oil.

Gas oil for both domestic and foreign shipment continued to ease off. Offerings of low diesel index oil at 3.5 cents were said to be free.

One report indicated a cargo of No. 2 heating oil for domestic shipment had been sold at 3.25 cents. Confirmation, however, was lacking.

Export gasoline continued to be featured by indifferent trading. Only an occasional feeler inquiry was reported in the market. Some reports were that foreign buyers' ideas of prices were 0.125 to 0.25 cent lower than quoted prices at the Gulf.

Tanker rates, both foreign and domestic, were fairly steady last week. Boat men here estimated that from 6 to 10 tankers in the domestic trade have been tied up, tending to halt the downward trend of spot charters.

Mid-Continent

N. P. N. News Bureau

TULSA, April 18.—Kerosine was the first product in the Mid-Continent to show definite improvement following a week of quiet trading resulting from blizzards in the middle west.

With the weather clearing and farming activity under way, inquiries for kerosine and tractor fuel increased to point where several refiners said they were buying in the open market to supplement their own output. Sales of at least 50 cars of kerosine were said to have been made to refiners late the past week.

Two inquiries for large quantities of kerosine for shipment over one year were reported in the market. It was indicated the kerosine would be used for tractor fuel in the spring and summer, range oil in the fall and winter.

Farming activity also increased the demand for third grade gasoline. One refiner said the ratio of his unleaded gasoline sales to leaded sales until recently had been 40 to 60. That ratio is now 65 to 35 he said, due mostly to the increased use of third grade gasoline as tractor fuel. Demand for high octane gasoline was somewhat slow in improving after the blizzards. Prices remained steady, but supplies were reported freer.

Natural gasoline was without feature. Prices were unchanged and material from Oklahoma continued to move to the Gulf.

Three grades of 150-160 vis. Mid-Continent bright stock were offered at prices 0.5 to 1.5 cents lower. South Texas lubes were reported unsettled by low-priced offerings of competitive oils from other districts. Unfinished lubes at lower prices were a disturbing factor also, it was said.

Pennsylvania

N. P. N. News Bureau

CLEVELAND, April 18.—Further declines were recorded in lubricating oils prices in the western Pennsylvania refinery market the second week of April. Kerosine and fuel oil continued their recent downward trend. Gasoline was the only product for which good demand was reported.

Low pour test bright stocks and neutral oils were quoted 1 to 2 cents a gallon lower by some refiners early the past week. No changes in quotations for the key neutral oil grades—25 pour test oils—were reported, but at least two refiners reported cutting their prices for 25 pour test bright stock 0.5 cent to 14 cents.

Some pickup in contract shipments of motor oils was indicated by some sellers following the declines which have carried prices down 1 to 2 cents in the past two weeks, but open market movement continued slack, they said.

Fair movement of kerosine was reported by most sellers in the lower field. Some pickup in demand also was indicated from the upper field, where, however, some sellers were quoting prices 0.125 cent lower with the 45 water white grade at 5 to 5.125 cents.

Two large blocks of fuel oil were reported sold to refiners for cracking stock and this relieved to some extent the burdensome inventories which have been reported for some time. The call from industrial accounts lagged, however, and prices in both

N. P. N. Gasoline Index

	Dealer T.w. Cents per	Tank Car Gal.
April 18	10.24	5.95
Month ago	10.09	5.92
Year ago	10.67	6.59

Dealer index is an average of "undivided" dealer prices, ex-tax, in 50 cities.

Tank car index is a weighted average of 12 wholesale markets for regular-grade gasoline.

REFINERY TANK CAR MARKETS

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days). Prices in cents per gallon except heavy fuel oils in dollars per barrel of 42 gallons, tank car lots, f.o.b. refineries in districts designated, except where otherwise noted. Inter-refinery and export prices not included, unless so stated in the respective markets. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude. Unless otherwise noted, gasoline octane ratings are determined by C.F.R. Motor method, A.S.T.M. D-357-33T; and lubricating oil specifications determined according to A.S.T.M. methods, unless otherwise noted.

Gasoline *and* Naphtha

Prices Effective	April 18	April 11
OKLAHOMA		
U. S. Motor: (Octane Test L-3)		
62 oct. & below	4.375– 4.50	4.375– 4.50
63-66 oct.	4.625– 4.75	4.625– 4.75
67-69 oct.	4.875– 5.00	4.875– 5.00
70-72 oct.	5.25 – 5.50	5.25 – 5.50
60-62, 400 e.p.	4.25 – 4.50	4.25 – 4.50
WESTERN PENNA.		
Bradford-Warren:		
Motor gasoline:		
U. S. Motor (58-62°)	5.125	5.125
Min. 65 oct.	6.50 – 7.00	6.50 – 7.00
Other districts:		
54-56 naphtha	4.875– 5.00	4.875– 5.00
Motor gasoline:		
U. S. Motor (58-62°)	5.125	5.00 – 5.125
Min. 65 oct.	6.25 – 6.50	6.25 – 6.50
CENTRAL MICHIGAN (Prices f.o.b. Cent. Mich. refinery group basis, for shipment within Michigan. Shipments, however, may originate at plants outside Central group).		
Str.-Run Gasoline	(d) 5.25 –5.75	(d) 5.00 –5.50
U. S. Motor: (Octane Test L-3)		
67-69 octane	7.75	7.75
70-72 octane	8.00 – 8.375	8.00 – 8.25
(d) Excluding Detroit shipment.		
CALIFORNIA (3c tax to be added to prices if used in state)		
U. S. Motor:		
54-58, for instate shipment	7.00 – 9.25	7.50 – 9.25
54-58, for outside state shipment	7.50 – 9.00	7.625– 9.00
58-61, 375-400 e.p., 65 oct. & above	8.25 – 9.75	8.25 – 9.75
N. TEX. (For shipment to Texas and N. Mex. destinations; Group 3 prices quoted on northern shipments)		
U. S. Motor: (Octane Test L-3)		
62 oct. & below	4.50 – 4.75	(a) 4.50 –4.75
63-66 oct.	5.00 – 5.50	(a) 5.00 –5.50
67-69 oct	5.375– 5.625	(a) 5.375–5.625
70-72 oct	5.625	(a)5.625
60-62, 400 e.p.	4.50 – 4.625	(a)4.625
KANSAS (For Kansas destinations only)		
U. S. Motor: (Octane Test L-3)		
62 oct. & below	4.625– 4.75	4.625– 4.75
70-72 oct.	5.50 – 5.625	5.50 – 5.625
W. TEX.		
U. S. Motor: (Octane Test L-3)		
62 oct. & below	4.75 – 5.00	4.75 – 5.00
63-66 oct.	5.25 – 5.50	5.25 – 5.50
67-69 oct.	5.625– 5.875	5.625– 5.875
70-72 oct.	6.00 – 6.25	6.00 – 6.25
E. TEX.		
60-62, 400 e.p.	(a)4.50	(a)4.50
N. LA. (For shipment within La. & into Ark.)		
U. S. Motor: (Octane Test L-3)		
62 oct. & below	(b)4.50	4.25 – 4.50
63-66 oct.	(b)5.00	4.75 – 4.875
67-69 oct.	(b)5.125	4.875– 5.00
70-72 oct.	(b)5.625	5.375– 5.50
ARKANSAS (For shipment within Ark. & into La.)		
U. S. Motor: (Octane Test L-3)		
62 octane & below	(b)4.625	(b)4.625
67-69 oct.	(b)5.125	(b)5.125
OHIO (Quotations of S. O. Ohio. Delivered anywhere in Ohio).		
U. S. Motor	8.25	8.25
Above 65 oct.	8.50	8.50

Natural Gasoline

(Prices are those to blenders on freight basis shown below. Shipments, however, may originate in other Mid-Continent manufacturing districts, such as Panhandle Texas, S. W. Texas or Kans.)

F.O.B. GROUP 3		
Grade 26-70	2.50	2.50 – 2.625
F.O.B. BRECKENRIDGE		
Grade 26-70	2.625	2.625
CALIFORNIA (F.o.b plants in Los Angeles basin)		
75-85, 350-375 e.p. for blending	7.50	7.50

(a) Nominal.
(b) Only one refiner quoting.
(d) No price reported.

Kerosine

Prices Effective	April 18	April 11
WESTERN PENNA.		
Bradford-Warren:		
45 w.w.	5.00 – 5.125	5.125
46 w.w.	5.125	5.125
Other districts:		
45 w.w.	5.00	5.00
46 w.w.	5.125	5.125
47 w.w.	5.25	5.25
CENTRAL MICHIGAN (Prices f.o.b. Cent. Mich. refinery group basis, for shipment within Michigan. Shipments, however, may originate at plants outside Central group.)		
47-49 w.w.	5.25 – 5.55	5.00 – 5.55
OKLAHOMA		
41-43 w.w.	4.125– 4.25	4.125– 4.25
42-44 w.w.	4.375– 4.50	4.375– 4.50
KANSAS (For Kansas destinations only).		
41-43 w.w.	4.375– 4.625	4.375– 4.625
42-44 w.w.	4.625– 4.875	4.625– 4.875
N. TEX. (For shipment to Texas and New Mexico destinations; Group 3 prices quoted on northern shipments).		
41-43 w.w.	4.50	4.50
E. TEX.		
41-43 w.w.	(a) 4.00 –4.125	(a) 4.00 –4.125
N. LA. (For shipment within La. and into Ark.)		
41-43 w.w.	4.375– 4.625	4.375– 4.625
ARK. (For shipment within Ark. and into La.).		
41-43 w.w.	(b)4.625	(b)4.625
CALIFORNIA		
40-43 w.w.	5.50 – 7.00	5.50 – 7.00

Gas *and* Fuel Oils

Prices Effective	April 18	April 11
WESTERN PENNA.		
Bradford-Warren:		
36-40	4.25 – 4.375	4.375
Other districts: (Excluding Pittsburgh District Prices).		
36-40	3.75 – 4.00	4.00
CENTRAL MICHIGAN (Prices f.o.b. Cent. Mich. refinery group basis, for shipment within Michigan. Shipments, however, may originate at plants outside Central group.)		
P.W. Distillate	4.625– 5.00	4.75 – 5.25
No. 3 gas oil, Str.	4.375– 4.625	4.50 – 4.75
U.G.I. gas oil	3.75 – 4.375	3.75 – 4.375
Fuel Oils (Vis. at 100):		
500-700 Vis.	2.125– 2.625	2.125– 2.625
300-500 Vis.	2.25 – 2.75	2.25 – 2.75
100-300 Vis.	2.75 – 3.25	2.75 – 3.25
OKLAHOMA		
No. 1 white	3.75 – 4.00	3.75 – 4.00
No. 1 straw	(d)	(a) 3.75 –3.875
No. 2 straw	3.625– 3.75	3.625– 3.75
U. G. I. gas oil	(a) 3.00 –3.25	(a) 3.00 –3.25
28-30 zero	3.375	3.375– 3.50
24-26	(b)$0.925	(b)$0.925
18-22	(a)$0.825-$0.875	(a)$0.825-$0.875
14-16	(a)$0.80-$0.825	(a)$0.80 -$0.825
KANSAS (For Kans. destinations only).		
No. 1 p.w. fuel oil	4.125– 4.375	4.125– 4.375
10-14 fuel oil	$0.55 –$0.65	$0.55 –$0.65
N. TEX. (For shipment to Texas and N. Mex.; Group 3 prices quoted on northern shipments).		
No. 1 white	4.25	(a)4.25
U. G. I. gas oil	(d)	2.75 – 2.875
N. LA. (For shipment within La. and into Ark.)		
No. 2	3.50 – 3.625	3.50 – 3.625
20-24	$1.10 –$1.15	$1.10 –$1.15
16-20	$0.90 –$0.95	$0.90 –$0.95
10-14	$0.80 –$0.85	$0.80 –$0.85
ARK. (For shipment within Ark. and into La.).		
No. 2	(b)3.625	(b)3.75
28-30 gas oil, zero	(b)3.375	(b)3.50
CALIFORNIA		
San Joaquin Valley:		
Heavy fuel	$0.60 –$0.85	$0.60 –$0.85
Light fuel	$0.75 –$0.95	$0.75 –$0.95
Diesel fuel (per gal.)	3.25 – 4.00	3.50 – 4.00
Stove dist. (per gal.)	3.50 – 6.00	3.75 – 6.00
Los Angeles:		
Heavy fuel	$0.60 –$1.00	$0.60 –$1.00
Light fuel	$0.75 –$1.10	$0.75 –$1.10
Diesel fuel (per gal.)	2.875– 4.00	3.00 – 4.00
Stove dist. (per gal.)	3.25 – 6.00	3.25 – 6.00

Gas and Fuel Oils (Cont'd)

Prices Effective	April 18	April 11
San Francisco:		
Heavy fuel	$1.05	$1.05
Light fuel	$1.15	$1.15
Diesel fuel (per gal.)	4.50	4.50
Stove dist. (per gal.)	6.50	6.50

Note: All above heavy fuels meet Pacific specification 400; light fuel, spec. 300; Diesel fuels, spec. 200; and stove distillate, spec. 100.

Neutral Oils

WESTERN PENNA. (Refiners report no open spot market sales being made to jobbers and give the following as their quotations only.)

Viscous Neutrals No. 3 col. (*Viscosity at 70° F.*)

200 Vis. (180 at 100°) 420-425 fl.		
0 p.t.	(b)18.50	(d)
10 p.t.	(b)17.50	(d)
15 p.t.	(b)17.00	(d)
25 p.t.	16.00	16.00 –17.00
180 Vis. (165 at 100) 410-415 fl.		
25 p.t.	(d)	(d)
150 Vis. (143 at 100) 400-405 fl.		
0 p.t.	(b)16.50	(d)
10 p.t.	(b)15.50	(d)
15 p.t.	(b)15.00	(d)
25 p.t.	14.00	14.00 –15.00

SOUTH TEXAS

Vis. Color Pale Oils: (*Vis. at 100° F.*)		
100 No. 1½-2½	4.75 – 5.25	4.75 – 5.25
200 No. 2-3	6.25 – 6.75	6.25 – 6.75
300 No. 2-3	6.75 – 7.25	6.75 – 7.25
500 No. 2½-3½	7.75 – 8.25	7.75 – 8.25
750 No. 3-4	8.25 – 8.75	8.25 – 8.75
1200 No. 3-4	8.75 – 9.25	8.75 – 9.25
2000 No. 4	9.00 – 9.50	9.00 – 9.50
Red Oils:		
200 No. 5-6	6.25 – 6.75	6.25 – 6.75
300 No. 5-6	6.75 – 7.25	6.75 – 7.25
500 No. 5-6	7.75 – 8.25	7.75 – 8.25
750 No. 5-6	8.25 – 8.75	8.25 – 8.75
1200 No. 5-6	8.75 – 9.25	8.75 – 9.25
2000 No. 5-6	9.00 – 9.50	9.00 – 9.50

Note: South Texas red oil prices shown above cover oils with green cast; blue cast red oils are slightly lower in some cases.

MID-CONTINENT (Vis. at 100° F.; F.o.b. Tulsa basis).

Pale Oils: (0 to 10 P.P.) Vis. Color		
60-85—No. 2	5.50	5.50
86-110—No. 2	6.00	6.00
150—No. 3	9.00	9.00
180—No. 3	10.00	10.00
200—No. 3	10.50	10.50
250—No. 3	11.50	11.50
280—No. 3	12.50	12.50
300—No. 3	13.00	13.00
Red Oils:		
180—No. 5	(b)9.00	(b)9.00
200—No. 5	9.50 –10.00	9.50 –10.00
250—No. 5	(d)	(d)
280—No. 5	11.50 –11.75	11.50 –11.75
300—No. 5	11.75	(b)11.75

Note: Viscous oils, 15-25 p.p., generally are quoted 0.5c under 0-10 p.p. oils. Non-viscous oils, 15-25 p.p., generally are quoted 0.25c under 0-10 p.p. oils. Viscous oils (150-300 vis.), No. 4 color, generally are quoted 0.5c above No. 5 color oils.

CHICAGO (Vis. at 100° F.)

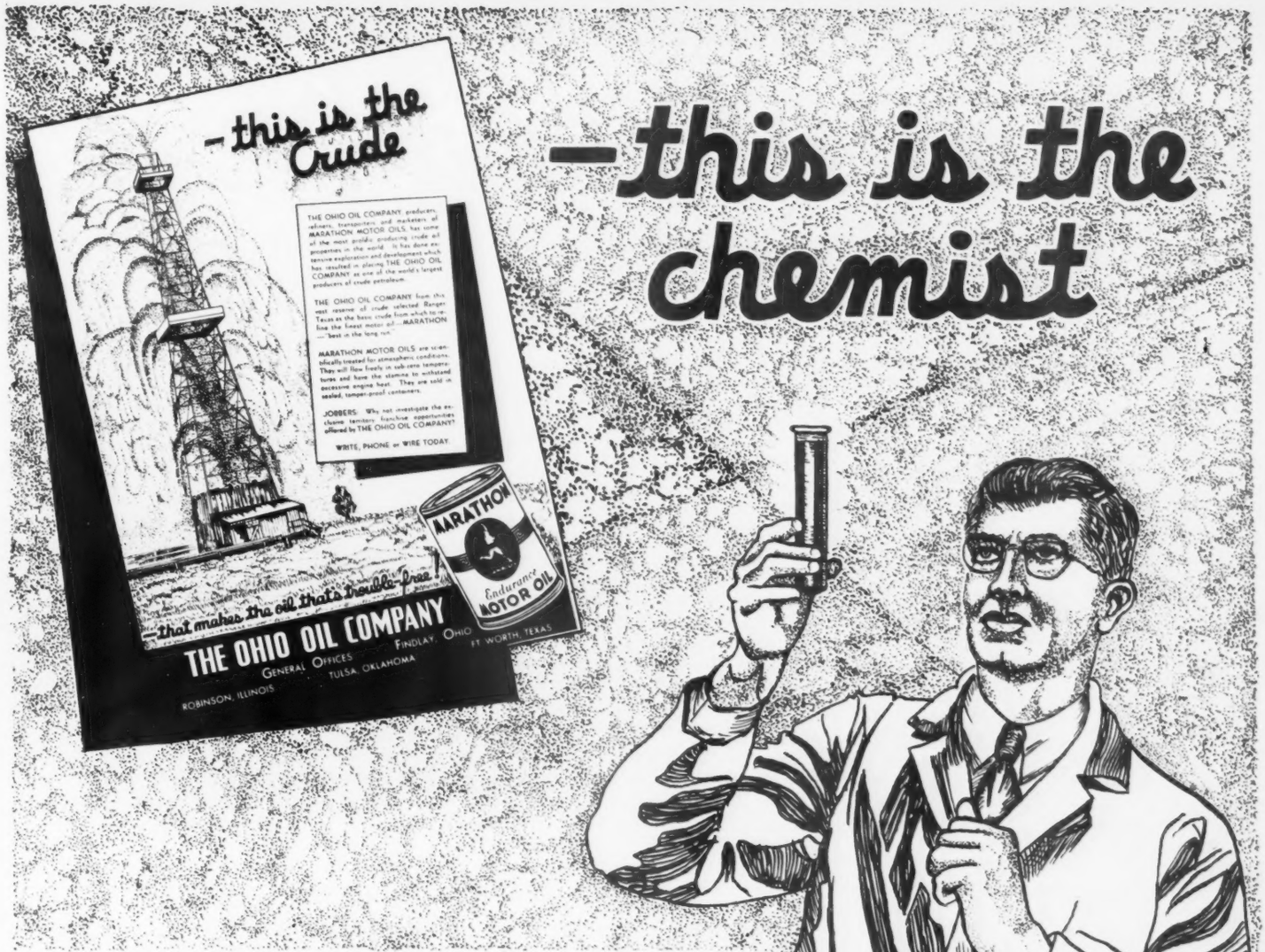
Pale Oils (e)0 to 10 p.p.: Vis. Color		
60-85—No. 2	7.25	7.25
86-110—No. 2	7.75	7.75
150—No. 3	10.00	10.00
180—No. 3	11.00	11.00
200—No. 3	11.50	11.50
250—No. 3	12.50	12.50
Red Oils:		
180—No. 5	10.00	10.00
200—No. 5	10.50	10.50
250—No. 5	11.50	11.50
280—No. 5	12.50	12.50
300—No. 5	12.75	12.75

(e) Viscous oils, 15 to 30 p.p. are quoted 0.5c lower, 60-85 and 86-110 No. 2 non-viscous oils, 15 to 30 p.p., are quoted 0.25c lower. To obtain delivered prices in Chicago, add 0.25c per gal

Cylinder Stocks

MID-CONTINENT (F.o.b. Tulsa basis).

Bright Stocks:		
190-200 Vis. at 210° D	(b)19.00	(b)19.00
150-160 Vis. at 210° D:		
0 to 10 p.p.	14.50 –16.00	16.00
10 to 25 p.p.	13.50 –15.50	14.50 –15.50
25 to 40 p.p.	14.50 –15.00	14.50 –15.00
150-160 vis. at 210° E	13.50 –15.00	13.50 –15.00


—this is the Crude
THE OHIO OIL COMPANY, producers, refiners, transporters and marketers of MARATHON MOTOR OILS, has some of the most prolific producing crude oil properties in the world. It has done extensive exploration and development which has resulted in placing THE OHIO OIL COMPANY as one of the world's largest producers of crude petroleum.
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MARATHON MOTOR OILS prove the fact that no expense has been spared by THE OHIO OIL COMPANY in maintaining the most modern refining methods and scientifically equipped laboratories to guarantee their customers dependability, quality and constant uniformity in refined petroleum products.

THE OHIO OIL COMPANY'S chemists have selected Ranger Texas crude from their vast reserves as the basic crude from which MARATHON MOTOR OILS are refined and you can be assured of their constant uniformity and dependable quality.

The laboratories of each refinery and their staffs of chemical engineers are continually collaborating with each other and with the research departments of the leading automobile manufacturers in keeping MARATHON MOTOR OIL abreast of the latest improvements.

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THE OHIO OIL COMPANY

GENERAL OFFICES - - - FINDLAY, OHIO

ROBINSON, ILLINOIS TULSA, OKLAHOMA FT. WORTH, TEXAS

the upper and lower fields were down 0.125 cent.

Two lower field refiners said late in the week they had advanced their quotations for U. S. Motor gasoline 0.125 cent to 5.125 cents. Others continued to ask 5 cents. All reports indicated shipments against contracts were heavy and a fairly active open market spot demand.

Eastern

N. P. N. News Bureau

NEW YORK, April 18.—While the majority of independent suppliers in the New York harbor market reported late last week that they had advanced their quotations for high octane gasoline in barge lots 0.25 cent to 6.25 cents, reports of one large sale at slightly more than 0.5 cent under 6.25 cents was made known.

In announcing that they were holding for a minimum of 6.25 cents for high octane in the harbor, sellers said they were trading dollars, or losing money at 6 cents.

They pointed to the prevailing price of 5.375 cents for this grade at the Gulf, to which must be added freight of about 0.4 cent on the basis of current tanker rates, plus terminaling charges and loss. This brought the laid-in price at New York terminals very close to 6 cents, they said.

Following Socony-Vacuum's 0.5-cent advance in its posted tank car and tank wagon gasoline prices in New England, the wholesale gasoline market at Boston rallied somewhat. Late the past week, however, some independent suppliers were taking business 0.25 cent lower, and prices were reduced.

Distributors generally reported that gasoline consumption has not kept pace with the improvement in weather, and that volume was about five per cent under what could normally have been expected in view of the ideal motoring conditions.

California

N. P. N. News Bureau

LOS ANGELES, April 16.—West coast petroleum markets were in an up and down mood the past week. Suppliers of bulk lots spoke in terms of probable lower prices should a spot sale be made, but improved weather conditions helped domestic demand and tended to firm retail prices on some products.

Bulk suppliers were not optimistic concerning immediate offshore business of a spot nature. Some exploratory inquiry from Atlantic foreign points for gasoline and burning oils in cargo lots received almost no attention in the face of lower quotations for these products at the Gulf.

Although no sales were reported to support the change, most large sup-

(Continued on page 60)

Fuel Oil . . . . .

CHICAGO, April 18.—A gradual slackening in demand for all grades of light fuel oils was reported by resale agents in the Mid-Western market last week. All grades were quoted 0.125 cent lower by the majority of suppliers.

Some sellers indicated a fair demand for prime white distillate as blending stock for tractor fuel but no sales of sizable quantities were reported.

Michigan refiners reported slower movement of prime white distillate and current quotations ranged from 4.75 to 5.25 cents.

Heavy fuels continued stagnant in both the Chicago trading area and in central Michigan. Michigan refiners said they expected the opening of the road oil season to relieve them of some of their burdensome stocks of heavy oils.

* * *

NEW YORK, April 18.—Fuel oil prices at eastern seaboard points continued to decline in the face of the record-shattering high temperatures the second week of April.

Nos. 2, 3 and 4 fuel oils were offered 0.25 cent lower in the New York harbor and Boston markets.

Distributors generally were turning attention to the next heating oil season as warm weather has sounded the death knell for domestic consumption this season.

* * *

TULSA, April 18.—Active trading in the Mid-Continent light fuel oil market the first week in April tapered off noticeably last week as weather conditions in the middle west became more seasonable.

The spurt in activity earlier this month gave some refiners an opportunity to work off small quantities of light fuels, but other refiners said their stocks still were excessive. One refiner who two weeks ago advanced his prices for all grades of light fuel 0.125 cent, reported reducing his quotations a similar amount the past week.

Heavy railroad and industrial fuels continued to be a drug on the market, refiners said. Demand from the rails has been curtailed drastically and the call from industrial accounts was practically nil, according to reports.

Pennsylvania Refinery Lubricating Oil Inventory

(Issued by National Petroleum Association)

	March 31 Gallons	April 7 Gallons
1. **Raw Long Residuum** (Including all raw long residuum below, and not salable, as 600 fire)	1,223,179	1,417,412
2. **600 Steam Refined** (Includes all steam refined stock commonly sold or used as 600 and as raw material for bright stocks)	6,932,394	7,033,106
3. **Other Steam Refined** (Not included in 1 and 2 above)	5,993,314	5,950,965
4. **Finished Dewaxed Long Res.**	2,946,636	3,021,580
5. **Bright Stock** (Does not include any material reported in 4, above)	22,645,582	23,400,341
6. **Viscous Neutral,** below 180 vis. but not below 142 vis. @ 100	9,101,953	9,077,117
7. **Viscous Neutral,** 180 vis @ 100 and above	9,069,880	9,252,815

TANK WAGON MARKETS, HEATING OILS

Prices in Effect April 18, 1938

Following are tank wagon prices of various grades of heating oil at the points shown in various territories. Prices are in cents per gallon.

S. O. NEW JERSEY

	No. 1	No. 2	No. 3	No. 4
Atlantic City, N. J.	8.5	6.5	....	6.5
Newark	8.0	6.5	....	6.5
Annapolis, Md.	....	7.25	....	....
Baltimore	8.0	7.0	....	7.0
Washington, D. C.	8.5	7.75	....	7.75
Norfolk, Va.	8.0	6.75	....	....
Petersburg	8.25	7.0	....	....
Richmond	8.25	7.0	....	7.0
Charlotte, N. C.	9.5	8.5	....	....
Hickory	....	9.0	....	....
Raleigh	9.5	8.0	....	....
Charleston, S. C.	8.625	7.375	....	....
Columbia	9.8	8.5	....	....
Spartanburg	10.6	9.3	....	....

SOCONY-VACUUM OIL CO. INC.

(S. O. New York Division)

New York City	*	7.50	7.50	7.50
Albany, N. Y.	*	7.50	7.50	7.50
Rochester, N. Y.	*	7.50	7.50	7.50
Boston, Mass.	*	7.00	7.00	7.00
Bangor, Me.	*	8.00	8.00	8.00
Manchester, N. H.	*	7.50	7.50	7.50
Burlington, Vt.	*	8.00	8.00	8.00
Hartford, Conn.	*	7.00	7.00	7.00
New Haven, Conn.	*	7.00	7.00	7.00
Providence, R. I.	*	7.00	7.00	7.00

*Prices for No. 1 fuel in Socony-Vacuum territory same as for kerosine which see in tank wagon table for various cities; prices change with kerosine.

ATLANTIC REFINING Cont'd

	No. 1	No. 2	No. 3	No. 4
Philadelphia, Pa.	7 75	7 00	7 00	7 00
Allentown, Pa.	8 25	7 50	7.50	7.50
Wilmington, Del.	8 25	7 50	7.50	7.50
Springfield, Mass.	9 00	7.50	....	7 50
Worcester, Mass.	9.00	7.50	....	7 50
Hartford, Conn.	9.00	7.50	....	7.50

S. O. OHIO

Columbus Division and Cleveland	7 50	7 50	7 00	...
City of Lima	8 00	8 00	7 00	....
Rest of Ohio	8.00	8.00	7.50	....

Note: S. O. Ohio prices are for full compartment hose dumps, bucket dumps are 0.5c per gallon higher.

S. O. INDIANA

Stanolex Fuel and Furnace Oils

	No. 1 Fuel	Stanolex Furnace
Chicago	†8.8	7.00
Indianapolis	...	*12.2
Detroit	...	7.1
Milwaukee	8.4	7.7
Minneapolis	7.8	7.8
Sioux City	7.5	7.5
St. Louis	7.7	7.0
Kansas City	6.8	6.8

*Includes state tax of 4c.

†This price applies to 1 to 99 gals. deliveries; 150 gals. and over, 7c.

Note: Small-lot deliveries of light fuel oils range up to 2c higher than above quotations.

REFINERY TANK CAR MARKETS

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days) unless otherwise stated. Prices in cents per gallon, except heavy fuel oils in dollars per barrel of 42 gallons, wax and petrolatums in cents per pound in barrels, tank car lots, f.o.b. refineries in districts designated, except where otherwise noted. Inter-refinery and export prices not included unless so stated in the respective markets. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude. Unless otherwise noted, gasoline octane ratings are determined by C.F.R. Motor method, A.S.T.M. D-357-33T; and lubricating oil specifications determined according to A.S.T.M. methods, unless otherwise noted.

Cylinder Stocks (cont'd)

Prices Effective	April 18	April 11
Mid-Continent (cont'd)		
120 Vis. at 210° D:		
0 to 10 p.p.	15.125–15.25	15.125–15.25
10 to 25 p.p.	(c)	(c)
25 to 40 p.p.	14.25	14.25
600 S.R. Dark Green	5.00 – 7.50	5.00 – 7.50
600 S.R. Olive Green	7.00 – 9.50	7.00 – 9.50
631 S.R.	(b)12.50	(b)12.50
Black Oil	3.50 – 4.00	3.50 – 4.00
CHICAGO (Viscosity at 210°)		
Unfiltered Steam Refined:		
140	9.00	9.00
160	10.00	10.00
200	11.00	11.00
Bright stocks, 160 vis. at 210. No. 8 color:		
0 to 10 p.p.	16.75	17.75
15 to 25 p.p.	15.75	16.75
30 to 40 p.p.	15.25	16.25
E filtered Cyl. Stock	14.50	14.50

To obtain prices delivered in Chicago, add 0.25c per gal.

(a) Nominal.
(b) Only one refiner quoting.
(c) No price reported.

Prices Effective	April 18	April 11
WESTERN PENNA. (Refiners report no open spot market sales being made to jobbers and give the following as their quotations only.)		
600 S.R. filterable	8.50 – 9.50	8.50 – 9.50
650 S.R.	10.50 –11.50	10.50
600 fl.	11.00	11.00
630 fl.	14.00	14.00
Bright stock, 145-155 vis. at 210°, 540-550 flash, No. 8 color:		
10 p.t.	(b)17.50	(c)
15 p.t.	(b)16.00	(c)
20 p.t.	(c)	(c)
25 p.t.	14.00 –14.50	14.50 –15.50

Petrolatums

Prices Effective	April 18	April 11
WESTERN PENNA. (In bbls., carloads; in tank cars, 0.5c less)		
Snow White	6.125– 6.25	6.125– 6.25
Lily White	5.125– 5.25	5.125– 5.25
Cream White	4.125– 4.25	4.125– 4.25
Light Amber	2.625– 2.75	2.625– 2.75
Amber	2.375– 2.50	2.375– 2.50
Red	2.00 – 2.25	2.00 – 2.25

Wax

Prices Effective	April 18	April 11
WESTERN PENNA. (In bbls., carloads, New York)		
122-124 A.m.p., w.c. scale	(a) 1.85 – 2.00	1.85 – 2.00
124-126 A.m.p., w.c. scale	(a) 1.85 – 2.00	1.85 – 2.00
(a) In bbls., carload, New York.		
OKLAHOMA (In bbls. or burlap bags, carloads)		
124-126 A.m.p., w.c. scale	(a) 2.10 –2.25	2.10 – 2.25
(a) In bbls. or burlap bags, carloads.		

CHICAGO (In bags, carload lots. Melting points are E.M.P. (A.S.T.M.) methods; add 3° F. to convert into A.m.p.)

Fully refined:		
122-124	4.45	4.45
125-127	4.55	4.55
127-129	4.65	4.65
130-132	**5.10	**5.10
132-134	**5.35	**5.35
135-137	**6.10	**6.10

**Same prices quoted in bags or slabs loose.

MID-WESTERN TANK CAR MARKET

Prices are those made by Chicago sellers, on Group 3 (Oklahoma) freight basis, although shipments may originate in other South-western or Mid-western refining districts

Gasoline

Prices Effective	April 18	April 11
U. S. Motor: (Octane Test L-3)		
62 oct. and below	4.125– 4.375	4.25 – 4.375
63-66 oct.	4.375– 4.625	4.375– 4.625
67-69 oct.	4.625– 5.00	4.75 – 5.00
70-72 oct.	4.875– 5.25	5.00 – 5.25

Kerosine

41-43 w.w.	4.00 – 4.25	4.125– 4.25
42-44 w.w.	4.25 – 4.375	4.25 – 4.50

(b) One seller quoting.

Fuel and Gas Oils

Prices Effective	April 18	April 11
Domestic:		
No. 1 p.w.	3.625– 3.875	3.875– 4.00
No. 1 straw	3.50 – 3.875	3.75 – 3.875
No. 2 straw	3.25 – 3.625	3.50 – 3.75
No. 3	3.125– 3.50	3.375– 3.50
No. 4	$1.05 –$1.10	$1.05 –$1.10
No. 5	$0.65 –$0.75	$0.65 –$0.75
Range oil	3.875– 4.00	3.875– 4.125
Industrial:		
No. 4	$0.95 –$1.05	$0.95 –$1.05
No. 5	$0.60 –$0.65	$0.60 –$0.65

Prices Effective	April 18	April 11
Industrial (cont'd)		
No. 6	$0.40 –$0.55	$0.425–$0.55
U. G. I. gas oil	2.625– 2.875	2.625– 2.875

Naphtha and Solvent

Stoddard solvent	5.875	5.875
Cleaners' naphtha	6.375	6.375
V. M. & P. naphtha	6.375	6.375
Mineral spirits	5.375	5.375
Rubber solvent	6.375	6.375
Lacquer diluent	7.375	7.375

DAILY GASOLINE PRICES

Daily range of gasoline prices as reported in PLATT'S OILGRAM (Week Ended April 15, 1938)

U. S. Motor, (Octane Number determined according to L-3 Method in Okla., Texas and Mid-Western Districts):	April 11	April 12	April 13	April 14	April 15
62 octane and below:					
Oklahoma	4.375– 4.50	4.375– 4.50	4.375– 4.50	4.375– 4.50	4.375– 4.50
*North Texas	†4.50 – 4.75	†4.50 – 4.75	†4.50 – 4.75	†4.50 – 4.75	†4.50 – 4.75
West Texas	4.75 – 5.00	4.75 – 5.00	4.75 – 5.00	4.75 – 5.00	4.75 – 5.00
Mid-Western (Group 3 basis)	4.25 – 4.375	4.25 – 4.375	4.25 – 4.375	4.25 – 4.375	4.125 – 4.375
63-66 octane:					
Oklahoma	4.625– 4.75	4.625– 4.75	4.625– 4.75	4.625– 4.75	4.625– 4.75
*North Texas	†5.00 – 5.50	†5.00 – 5.50	†5.00 – 5.50	†5.00 – 5.50	†5.00 – 5.50
West Texas	5.25 – 5.50	5.25 – 5.50	5.25 – 5.50	5.25 – 5.50	5.25 – 5.50
Mid-Western (Group 3 basis)	4.375– 4.625	4.375– 4.625	4.375– 4.625	4.375– 4.625	4.375– 4.625
67-69 octane:					
Oklahoma	4.875– 5.00	4.875– 5.00	4.875– 5.00	4.875– 5.00	4.875– 5.00
*North Texas	†5.375– 5.625	†5.375– 5.625	†5.375– 5.625	†5.375– 5.625	†5.375– 5.625
West Texas	5.625– 5.875	5.625– 5.875	5.625– 5.875	5.625– 5.875	5.625– 5.875
Mid-Western (Group 3 basis)	4.75 – 5.00	4.75 – 5.00	4.75 – 5.00	4.75 – 5.00	4.75 – 5.00
70-72 octane:					
Oklahoma	5.25 – 5.50	5.25 – 5.50	5.25 – 5.50	5.25 – 5.50	5.25 – 5.50
*North Texas	†5.625	†5.625	†5.625	†5.625	†5.625
West Texas	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
Mid-Western (Group 3 basis)	5.00 – 5.25	5.00 – 5.25	5.00 – 5.25	5.00 – 5.25	5.00 – 5.25
Motor Gasoline, 60-64 oct.					
New York harbor	†6.25 – 6.50	†6.25 – 6.50	†6.25 – 6.50	†6.25 – 6.50	†6.25 – 6.50
Philadelphia district	†6.50 – 6.75	†6.50 – 6.75	†6.50 – 6.75	†6.50 – 6.75	†6.50 – 6.75
Baltimore district	†6.50 – 6.75	†6.50 – 6.75	†6.50 – 6.75	†6.50 – 6.75	†6.50 – 6.75
Motor Gasoline, 65 oct. & above:					
New York harbor	†6.50 – 6.75	†6.50 – 6.75	†6.50 – 6.75	†6.50 – 6.75	†6.50 – 6.75
Philadelphia district	†6.50 – 6.75	†6.50 – 6.75	†6.50 – 6.75	†6.50 – 6.75	†6.50 – 6.75
Baltimore district	†6.50 – 7.00	†6.50 – 7.00	†6.50 – 7.00	†6.50 – 7.00	†6.50 – 7.00
U. S. Motor, 58-62°:					
Bradford-Warren (Western Penna.)	5.125	5.125	5.125	5.125	5.125
Other districts (Western Penna.)	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125	5.00 – 5.125
Motor Gasoline, Min., 65 oct.:					
Bradford-Warren (Western Penna.)	6.50 – 7.00	6.50 – 7.00	6.50 – 7.00	6.50 – 7.00	6.50 – 7.00
Other districts (Western Penna.)	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50

*For shipment to Texas and New Mexico destinations; Group 3 prices are quoted on northern shipment.
†Nominal.
‡Only one refiner quoting.

TANK WAGON MARKETS

Tank car, tank wagon, dealer, and service station prices for gasoline do not include taxes; *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include* 1c *federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes, where levied, are indicated in footnotes. Discounts to various classes of buyers also are shown in footnotes. These prices in effect April* 18, 1938, *as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

S. O. New Jersey

Essolene (*Regular Grade*)

	Consumer Tank Car	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Atlantic City, N. J.	7.25	8.75	4	8.5
Newark, N. J.	7.25	8.75	4	8
Annapolis, Md.	8.35	9.85	5	9.5
Baltimore, Md.	7.75	9.25	5	9
Cumberland, Md.	9.15	11.65	5	10
Washington, D. C.	8	9.5	3	9.5
Danville, Va.	8.45	10.95	6	12.9
Norfolk, Va.	7.25	9.75	6	11.5
Petersburg, Va.	7.55	10.05	6	11.7
Richmond, Va.	7.55	10.05	6	11.7
Roanoke, Va.	8.75	11.25	6	12.9
Charleston, W. Va.	8.55	11.05	6	12.6
Parkersburg, W. Va.	7.85	9.35	6	11.2
Wheeling, W. Va.	8.85	10.25	6	12.2
Charlotte, N. C.	9.15	11.65	7	12.6
Hickory, N. C.	9.65	12.15	7	13
Mt. Airy, N. C.	9.45	11.95	7	12.8
Raleigh, N. C.	8.75	11.25	7	12.1
Salisbury, N. C.	9.25	11.75	7	12.7
Charleston, S. C.	7.75	10.25	7	11.1
Columbia, S. C.	8.75	11.25	7	12.1
Spartanburg, S. C.	9.45	11.95	7	12.9

Discount to undivided dealers: Dealer t.w. price less 0.5c per gal.

Price basis to commercial consumers: To contract accounts, purchasing at least one full compartment at a time by hose connection: Effective March 12, 1937, in New Jersey, and March 8 in Maryland, District of Columbia, and in Arlington and Fairfax Counties in Virginia, on yearly purchases: from 2,500 to 100,000 gals., consumer t.w. price at time and place of delivery; 100,000 gals. per year consumer tank car price, plus 0.5c per gal. Generally consumer t.w. price in foregoing states is equivalent of dealer t.w. price, less 0.5c per gal.

Effective May 15, 1937, on Essolene and Esso (by tank wagon) in North and South Carolina, West Virginia and Virginia (except Arlington and Fairfax Counties, which see above), commercial consumers taking deliveries of 50 gals. (West Va. 100 gals.) or more at one time will be billed at the posted consumer t.w. price. Deliveries less than 50 gals. (West Va. 100 gals.) will be billed at 4c per gal. over posted consumer t.w. price. Generally, posted consumer t.w. price will be equivalent to the dealer price less 0.5c per gal.

Kerosine Discount: 1c off t.w. price for 25 gals., or more, under contract thru territory (Baltimore City contract not necessary) except no discount in state of New Jersey.

Socony-Vacuum Oil Co., Inc.

(*S. O. New York Division*)

Socony Mobilgas (*Regular Grade*)

	Consumer Tank Car	"Split" Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Metropolitan N. Y. City: Boroughs of Manhattan, Bronx and Brooklyn (Kings and Queens)	7.5	9.5	*5	8.75
Borough of Richmond (Staten Is.)	7.5	9.5	*5	8.75
Albany, N. Y.	7.5	9.5	5	9
Binghamton, N. Y.	8.7	10.3	5	9
Buffalo, N. Y.	8	9	5	7.5
Jamestown, N. Y.	7.8	10.3	5	8.25
Plattsburg, N. Y.	7.9	9.9	5	9.5
Rochester, N. Y.	8.2	10	5	8.5
Syracuse, N. Y.	8.1	9.5	5	9
Danbury, Conn.	7.8	9.8	4	9
Hartford, Conn.	7.6	9.6	4	8.5
New Haven, Conn.	7.5	9.5	4	8
Bangor, Me.	8.5	10.3	5	9.5
Portland, Me.	8.2	10	5	8.75
Boston, Mass.	8	9.5	4	8.5
Concord, N. H.	8.8	11	5	9.5
Lancaster, N. H.	9.7	12	5	10.25
Manchester, N. H.	8.6	10.5	5	9
Providence, R. I.	8	9.3	4	8.5
Burlington, Vt.	8.4	10.4	5	9.5
Rutland, Vt.	8.6	10.7	5	9

*Plus 2% city sales tax computed at time of each sale.

Discount to undivided dealers; 0.5c less than "split" dealer t.w.

Price basis to commercial consumers: Effective about Nov. 15, 1936 in New York and New England for tank wagon delivery: monthly purchases of 25,000 gals. or over, pay consumer tank car price at point of delivery, plus 0.5c gal.; monthly purchases of 5,000 to 25,000 gals., pay undivided dealer tank wagon price at point of delivery; monthly purchases of less than 5,000 gals., pay divided dealer tank wagon price at point of delivery. Private consumers pay undivided dealer tank wagon price at point of delivery, plus 2c gal.

Atlantic Refining

Atlantic White Flash Gasoline (*Regular Grade*)

	Commercial Tank Car	Dealer T.W.	S.S.	Gasoline Taxes	Kerosine T.W.
Philadelphia, Pa.	7.25	8.75	12	5	10
Pittsburgh	8	10	15	5	10.5
Allentown	7.75	9.25	**	5	10.5
Erie	8	9.5	**	5	10
Scranton	8	9.5	**	5	10.5
Altoona	8	10	**	5	10.5
Harrisburg	7.5	9	**	5	10.5
Williamsport	8	10	**	5	10.5
Dover, Del.	...	9	**	5	10.5
Wilmington	...	9	**	5	10.5
Boston, Mass.	...	9.5	**	4	8.5
Springfield, Mass.	...	9.5	**	4	8
Worcester, Mass.	...	10.5	**	4	9
Fall River, Mass.	...	8.5	**	4	8.5
Hartford, Conn.	...	9.6	**	4	8
New Haven, Conn.	...	9.5	**	4	8
Providence, R. I.	...	9.3	**	4	8.5
Atlantic City, N. J.	...	8.75	**	4	8.5
Camden, N. J.	...	8.75	**	4	8.5
Trenton, N. J.	...	8.75	**	4	8.5
Annapolis, Md.	...	9.85	**	5	9.5
Baltimore, Md.	...	9.25	**	5	9
Hagerstown, Md.	...	10.35	**	5	10
Richmond, Va.	...	10.05	**	6	11.7
Wilmington, N. C.	...	10.35	**	7	11.3
Brunswick, Ga.	...	10	**	7	*13
Jacksonville, Fla.	...	9.5	**	8	11

*Georgia has kerosine tax of 1c per gal., not included in above price.

**Atlantic Refining transferred stations to dealers; no prices available.

Discount to undivided dealers: Dealer t.w. less 0.5c per gal.

Price basis to commercial consumers: in Penna. and Delaware, effective Mar. 11, 1937, on yearly gasoline purchases to contract accounts taking full compartment hose deliveries, using 100,000 gals. or more per year, tank car price plus 0.5c per gal.; consumers taking less than 100,000 gals., undivided dealer price. Consumers under contract and not under contract, taking less than full compartment delivery, and consumers not under contract taking full compartment delivery, get divided dealer price. Consumers taking less than 25 gals., t.w. delivery, get 4c above undivided dealer price.

Discount on kerosine: Effective Oct. 29, 1936, in Pennsylvania and Delaware, 2c per gal. off t.w. price on t.w. deliveries of 25 gals. or more at one time.

S. O. Ohio

Sohio X-70 Gasoline (*Regular Grade*)

	Consumer T.W.	†Divided Dlr.	Gasoline Taxes	Kerosine T.W.
Ohio State-wide	11.5	10.5	5	*12
Counties where prices are below statewide:				
Columbiana, Defiance and Pickaway	11	10	5	....
Franklin, Knox and Paulding	10.5	9.5	5	....

Renown Gasoline (*Third Grade*)

Ohio State-wide	11	10	5	....
Counties where prices are below statewide:				
Columbiana, Defiance and Pickaway	10.5	9.5	5	....
Franklin, Knox and Paulding	10	9	5	....
Counties where prices are above statewide:				
Butler, Clermont, Darke, Greene, Hamilton, Miami, Montgomery, Preble and Warren	11.5	10.5	5	....

S. O. Ohio Cont'd

Kerosine Prices

(Off Statewide Level)

Kerosine prices are off statewide level in the following counties:

Allen, Auglaize, Champaign, Columbiana, Darke, Geauga, Greene, Hardin, Logan, Mahoning, Mercer, Preble, Putnam, Shelby, Trumbull and Van Wert	*11.5
Paulding	*11
Ashtabula	*10.5
Fayette, Licking, Madison, Pickaway, Portage and Summit	*8.5

†This price also to authorized agents, exclusive of 0.5c rental. Discount to undivided dealers: 0.5c less than divided dealer t.w.

*Ohio has kerosine tax of 1c per gal., not included in above prices.

Commercial Tank Wagon Q.D.A. to contract accounts: Effective Oct. 20, 1937, thru Ohio (except in 30 counties), on monthly purchases, off posted consumer t.w. price: 0 to 999 gals., 0.5c; 1,000 to 19,999 gals., 1 5c; 20,000 gals. and over, 2.5c. The 30 counties where Q.D.A. differs from statewide are: Allen, Ashtabula, Auglaize, Butler, Champaign, Cuyahoga, Darke, Defiance, Erie, Fulton, Geauga, Hamilton, Hardin, Henry, Logan, Lorain, Lucas, Mahoning, Mercer, Ottawa, Paulding, Putnam, Sandusky, Scioto, Shelby, Trumbull, Van Wert, Washington, Williams and Wood.

Sales tax: Ohio's 3% sales tax, effective Jan. 27, 1935, is added "where assessable, to regular posted prices," S. O. Ohio says.

On kerosine, prices to resellers and commercial consumers are posted generally at 3c per gal. below consumer t.w. price in any quantity, when such prices are on statewide level.

S. O. Kentucky

Crown Gasoline (*Regular Grade*)

	Consumer T.W.	Net Dlr.	Gasoline Taxes	Kerosine T.W.
Covington, Ky.	12.5	10.5	6	11
Lexington, Ky.	13 5	10 5	6	11
Louisville, Ky.	13	10	6	10 5
Paducah, Ky.	13	10	6	10
Jackson, Miss.	12.5	9.5	7	*12
Vicksburg, Miss.	12.5	9.5	7	*12
Birmingham, Ala.	13	10	*8	12
Mobile, Ala.	12	9	*9	11
Montgomery, Ala.	12	10	*9	*12
Atlanta, Ga.	14	11	7	*13
Augusta, Ga.	14	11	7	*13
Macon, Ga.	14	11	7	*13.5
Savannah, Ga.	12.5	9.5	7	*11
Jacksonville, Fla.	12.5	9.5	8	11
Miami, Fla.	12	9	8	12.5
Pensacola, Fla.	13	10	*9	12
Tampa, Fla.	12.5	9.5	8	10.5

Kyso Gasoline (*Third Grade*)

Covington, Ky.	10.5	8	6	....
Lexington, Ky.	11 5	9	6	....
Louisville, Ky.	11	8.5	6	....
Paducah, Ky.	11.5	9	6	....
Jackson, Miss.	11	8.5	7	....
Vicksburg, Miss.	11	8.5	7	....
Birmingham, Ala.	11	8.5	*8	....
Mobile, Ala.	9.5	7	*9	....
Montgomery, Ala.	10 5	8	*9	....
Atlanta, Ga.	12	9 5	7	....
Augusta, Ga.	12	9 5	7	....
Macon, Ga.	12	9 5	7	....
Savannah, Ga.	10 5	8	7	....
Pensacola, Fla.	11	8.5	*9	....

Discounts to all tank wagon consumers: Effective Jan. 4, 1937, thru territory, on Crown gasoline, 3c per gal. below consumer t.w. price; on Kyso, 2.5c below, regardless of quantity purchased, per month

Discounts on kerosine: Prices in Kentucky are net, but in other states subject to 2c discount.

**Taxes*: In the tax column is included these city and county gasoline taxes at the following points: Mobile, 2c city; Birmingham, 1c city and 1c county; Montgomery, 1c city and 1c county; Pensacola, 1c city. Georgia, Mississippi and Montgomery, Ala. have kerosine taxes of 1c per gal., not included in above prices.

Above prices include these inspection fees on both gasoline and kerosine, per gallon, figured on basis of 50 gallons per barrel:

Alabama, 1/40c on gasoline, 1/2c on kerosine; Arkansas, 1/5c per gal. in a single barrel. 1/20c per gal. in bulk; Florida, 1/8c; Illinois, 3/100c; Indiana, 1/5c per gal. in lots up to 25 bbls.; 2/25c per gal. in lots of 25 bbls. or more; Kansas, 1/50c, (3/50c can be charged to meet inspection department expenses); Louisiana, 1/32c; Minnesota, 1/25c; Missouri, 3/100c; Nebraska, 3/100c; Nevada, gasoline, 1/20c; North Carolina, 1/4c; North Dakota, 1/20c; Oklahoma, 2/25c per gal. in lots of more than 50 bbls.. 1/5c in lots less than 50 bbls.; South Carolina, 1/8c; South Dakota, 1/10c; Tennessee, 2/5c; and Wisconsin, 1/25c.

Kerosine inspection fee only: Iowa, 3/50c; Michigan, 1/5c per gal.

TANK WAGON MARKETS

Tank car, tank wagon, dealer, and service station prices for gasoline do not include taxes; they do, however, include inspection fees as shown in general footnote. Gasoline taxes shown in separate column, include 1c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes, where levied, are indicated in footnotes. Discounts to various classes of buyers also are shown in footnotes. These prices in effect April 18, 1938, as posted by principal marketing companies at their headquarters offices, but subject to later correction.

S. O. Indiana

Red Crown (*Regular Grade*)
Stanolind (*Third Grade*)

	Red Crown Cons. T.W.	Dealer Prices Red Crown	Stano-lind	Gaso-line Taxes	Kero-sine T.W.
Chicago, Ill.	11.6	9.6	8.4	4	10.5
Decatur, Ill.	11.6	10.1	8	4	10.5
Joliet, Ill.	11.6	10.1	8.4	4	10.5
Peoria, Ill.	11.6	10.1	9.6	4	10.5
Quincy, Ill.	11.4	9.9	8.8	4	10.3
Indianapolis, Ind.	12.3	10.8	9.6	5	*11.2
Evansville, Ind.	12.1	10.6	7.1	5	*11
South Bend, Ind.	12.6	11.1	9.2	5	*9.4
Detroit, Mich.	11.3	9.8	9.3	4	10
Grand Rapids, Mich.	10.8	9.3	9.3	4	9.7
Saginaw, Mich.	12.3	10.8	10.3	4	9.3
Green Bay, Wis.	12.4	10.9	10.2	5	10.3
Milwaukee, Wis.	11.8	10.3	9.5	5	10.7
La Crosse, Wis.	12	10.5	10	5	10.9
Minneapolis-St. Paul	12	10.5	10	5	10.9
Duluth, Minn.	12.4	10.9	10.4	5	11.3
Mankato, Minn.	12	10.5	10	5	10.9
Des Moines, Ia.	11.4	9.9	7.5	4	*8.3
Sioux City, Ia.	11.6	10.1	9.6	4	*10.5
Davenport, Ia.	11.6	10.1	9.6	4	*10.5
Mason City, Ia.	11.8	10.3	9.8	4	*10.7
St. Louis, Mo.	11.2	9.7	7.5	*4	10.1
Kansas City, Mo.	10.9	9.4	8.9	*4	9.8
St. Joseph, Mo.	10.9	9.4	8.9	*4	9.8
Fargo, N. D.	13.2	11.7	11.2	4	12.1
Minot, N. D.	14.5	13	12.5	4	13.4
Huron, S. D.	12.5	11	10.5	5	11.4
Wichita, Kans.	10.4	8.9	7.9	4	8.3

*Taxes: in the tax column is included these city and state gasoline taxes at following points: Kansas City, St. Joseph and St. Louis, 1c city tax. Indiana has 4c, and Iowa has 3c kerosine tax per gal., not included in above prices.

Discount to commercial consumers: Effective Jan. 1, 1935, thru territory, except Michigan effective Feb. 1, on purchases per month, discount off t.w. prices; all gasolines, 25 to 1,000 gals., at t.w. price; 1,000 gals., or more, 1.5c off t.w. on Ethyl and Red Crown, and 1c on Stanolind (latter effective June 9, 1937). Minimum delivery is 25 gals.

S. O. Nebraska

Standard Red Crown Gasoline
(*Regular Grade*)

	T.W.	Dealer	Gaso-line Taxes	Kero-sine T.W.
Omaha, Neb.	12	10.5	6	10.8
McCook	11.8	9.3	6	10.3
Norfolk	12.4	10.9	6	10.3
North Platte	12.8	10.9	6	11.2
Scottsbluff	13.5	10.3	6	12.3

Discounts to commercial consumers: for tank wagon deliveries covered only by Standard Commercial Consumer Contract, effective January 1, 1935.

S. O. Louisiana

Essolene
(*Regular Grade*)

	Consumer Tank Car	Dealer T.W.	Gaso-line Taxes	Kero-sine T.W.
Little Rock, Ark.	7.25	9.75	7.5	11.5
Alexandria, La.	7	9.5	8	*9.5
Baton Rouge, La.	6.5	9	8	*11
New Orleans, La.	6.5	9	*10	*10
Lake Charles, La.	7.5	10	8	*11.5
Shreveport, La.	6	8.5	8	*8.5
Lafayette, La.	7.5	10	8	*11.5
Bristol, Tenn.	9.75	11	8	14.5
Chattanooga, Tenn.	9	11.5	8	13.5
Knoxville, Tenn.	9.5	12	8	14
Memphis, Tenn.	7.5	10	8	12
Nashville, Tenn.	8.5	11	8	10.5

*New Orleans gasoline tax includes 7c state, 1c federal, and 2c parish tax. Louisiana has kerosine tax of 1c per gal.; in addition New Orleans has 1c parish tax, not included in above prices.

Price basis to dealers: Undivided dealers get dealer price, less 0.5c.

Price basis to commercial consumers: Effective May 15, 1937, thru territory; commercial consumers taking 50 gals. or more at one time will be billed at posted consumer t.w. price; those taking less than 50 gals. at one time will be billed at 4c per gal. over posted consumer t.w. price. Generally, the posted consumer t.w. price will be equivalent to the dealer price less 0.5c per gal.

Humble Oil & Refining Co.

Humble Motor Fuel
(*Regular Grade*)

	*T.W.	S.S.	Gaso-line Taxes	Kero-sine T.W.
Dallas, Tex.	9	13	5	8
Ft. Worth, Tex.	9	13	5	8
Houston, Tex.	9 5	13 5	5	8
San Antonio, Tex.	8 5	12 5	5	8

U. S. Motor Gasoline
(*Third Grade*)

Dallas, Tex.	7	10	5
Ft. Worth, Tex.	7.5	10	5
Houston, Tex.	8.5	11.5	5
San Antonio, Tex.	7.5	10.5	5

*Price is t.w. price to all classes of dealers and consumers.

Price basis to "open" dealers: discount off posted retail price: when posted retail price, including all taxes on Esso motor fuel is: 19.1c per gal. and above, discount is 3.5c; 19c to 18.1c, 3c, and 18c and below, 2.5c. Humble motor fuel, 17.1c and above, 3.5c; 17 to 16.1c, 3c; and 16c and below, 2.5c; U. S. motor fuel, 15.1c and above, 2.5c; 15 to 14.1c, 2c; and 14c and below, 1.5c.

Continental Oil

Conoco Bronze (*Regular Grade*)
Demand (*Third Grade*)

	—Dealer Prices— Conoco Bronze	De-mand	Gaso-line Taxes	Kero-sine T.W.
Denver, Colo.	9	8	5	11.5
Grand Junc., Colo.	14	13	5	15
Pueblo, Colo.	8	7	5	10.5
Casper, Wyo.	12	11	5	11.5
Cheyenne, Wyo.	11	7	5	13
Billings, Mont.	13.5	12	6	15.5
Butte, Mont.	13.5	10.5	6	15.5
Great Falls, Mont.	13.5	12.5	6	15.5
Helena, Mont.	13.5	12.5	6	15.5
Salt Lake City, Utah	13	10	5	16
Boise, Ida.	15.5	13.5	6	18
Twin Falls, Ida.	15	14	6	18
Albuquerque, N. M.	11	10	†6.5	12
Roswell, N. M.	11	8.5	†6.5	10.5
Santa Fe, N. M.	12	9.5	*7	12
Muskogee, Okla.	9.5	8	5	7
Oklahoma City, Okla.	9	6	5	8
Tulsa, Okla.	9	6	5	6
Ft. Smith, Ark.	9.25	8.5	5	8
Little Rock, Ark.	9.75	7.625	7.5	9.5
Texarkana, Ark.	9	6	5	8.5

†Includes city tax of 0.5c.
*Includes 1c city tax.

S. O. California

Standard Gasoline
(*Regular Grade*)

	T.W	S.S.	Gaso-line Taxes	Kero-sine T.W.
San Francisco, Cal.	13.5	14.5	4	11.5
Los Angeles, Cal.	13	14	4	10
Fresno, Cal.	14.5	15.5	4	12.5
Phoenix, Ariz.	15.5	16.5	6	*12
Reno, Nev.	15.5	16.5	5	13
Portland, Ore.	14	15	6	13.5
Seattle, Wash.	14	15	6	13.5
Spokane, Wash.	16.5	17.5	6	16
Tacoma, Wash.	14	15	6	13.5

Flight Gasoline
(*Third Grade*)

San Francisco, Cal.	12	13	4	....
Los Angeles, Cal.	11.5	12.5	4	....
Fresno, Cal.	13	14	4	....
Reno, Nev.	14	15	5	....
Phoenix, Ariz.	14	15	6	....
Portland, Ore.	12.5	13.5	6	....
Seattle, Wash.	12.5	13.5	6	....
Spokane, Wash.	15	16	6	....
Tacoma, Wash.	12.5	13.5	6	....

*Arizona has kerosine tax of 5c per gal., not included in above prices.

Discount to dealers: on gasoline, off t.w. price on Standard Ethyl and Standard Gasoline, to 100% dealers, 3c; to split dealers, 2c; on Flight gasoline, both 100% and split dealers, 2c.

On Stanavo Aviation Gasoline, to all classes of dealers, 3c off t.w.

To commercial consumers: off tank wagon price: on single deliveries of 40 gallons and over. Stanavo Aviation, Standard Ethyl and Standard Gasolines, 3c. Flight Gasoline, 2c per gallon. Tank wagon delivery, less than 40 gals., 1c per gal. above posted t.w. price. Discounts on kerosine: in tank cars, 3c off tank truck price; plant deliveries to jobbers, 2.5c below tank truck price.

Canada

PRICES OF IMPERIAL OIL LTD.

Per Imperial Gallon, which is 1.2 U. S. Gallons

3-Star Imperial Gasoline
(*Regular Grade*)

	T.W.	Gasoline Taxes	Kero-sine T.W.
Hamilton, Ont.	16	6	17
Toronto, Ont.	16	6	17
Brandon, Man.	21.1	?	22.3
Winnipeg, Man.	20.5	?	20.7
Regina, Sask.	20	?	22
Saskatoon, Sask.	22.8	?	24.8
Edmonton, Alta.	19.5	?	21.5
Calgary, Alta.	17	?	19
Vancouver, B. C.	16	?	23
Montreal, Que.	15	?	17.5
St. John, N. B.	14.5	10	18.5
Halifax, N S.	14.5	10	18.5

Discounts to undivided dealers, 1c off t.w. price, except Maritime Provinces where undivided dealers pay t.w. price. Divided dealers pay t.w. price, thru territory.

Aviation Gasoline

Following are tank car and/or tank wagon prices, as indicated, of aviation gasoline in principal marketing territories (Stanavo Aviation Gasoline in all territories except where otherwise noted).

S. O. NEW JERSEY

	*Ethyl T.C.	Tank Car	T.W.
Bayonne, N. J.	19.5	9.5	12.5
Baltimore, Md.	....	10	13
Washington, D. C.	....	....	13.5
Richmond, Va.	....	....	14.7
Greensboro, N. C.	....	....	15.7
Raleigh, N. C.	....	....	17.6
Charleston, W. Va.	....	....	12.2

*This is Stanavo Ethyl Aviation Gasoline, 100 octane number, tank car price.

COLONIAL BEACON OIL CO.

	T.W.
Brooklyn, N. Y.	12.8
Buffalo, N. Y.	14.5
Boston, Mass.	15

S. O. PENNSYLVANIA

Philadelphia, Pa.	13.6
Pittsburgh, Pa.	14.4

S. O. LOUISIANA

New Orleans, La.	13 3
Shreveport, La.	13 6

Prices in above four territories are on a 74 octane grade aviation gasoline except where otherwise noted. An 80 octane product generally brings 0.5c premium and an 87 octane product, 1.5c premium over the 74 octane grade.

Note: S.a prices in above four territories are generally 6c over t.w. prices. Above t.w. prices are net, with no discounts allowed for quantity purchases. T.w. prices are generally tank car price, plus freight, plus 2.5c per gal.

S. O. OHIO
Thru Ohio
Stanavo Ethyl Aviation

	Consumer T.W.	Gasoline Taxes
73 octane	15.5	5
80 octane	16.5	5
87 octane	17.5	5

Discounts: For delivery on contract to hangar operators and resellers: 2c below consumer posted t.w. price, shown above.

S. O. INDIANA
Stanavo Ethyl Aviation Gasoline, 73 Octane Number

Chicago, Ill.	14.9 4
Detroit, Mich.	16.5 4
Milwaukee, Wis.	15.1 5
Minneapolis, Minn.	15.3 5
St. Louis, Mo.	14.5 3
Kansas City, Mo.	14.2 *4
Fargo, N. D.	16.5 4
Huron, S. D.	15.8 5

*Includes 1c city tax.

HUMBLE OIL & REFINING CO.

	Tank Car
Baytown, Tex.	8.5

CONTINENTAL OIL CO.
Conoco Special Gasoline

	Dealer	Gasoline Taxes
Denver, Colo.	14.5	5
Cheyenne, Wyo.	15	5
Helena, Mont.	16.5	6
Salt Lake City, Utah	17.5	5
Albuquerque, N. M.	14	*6.5

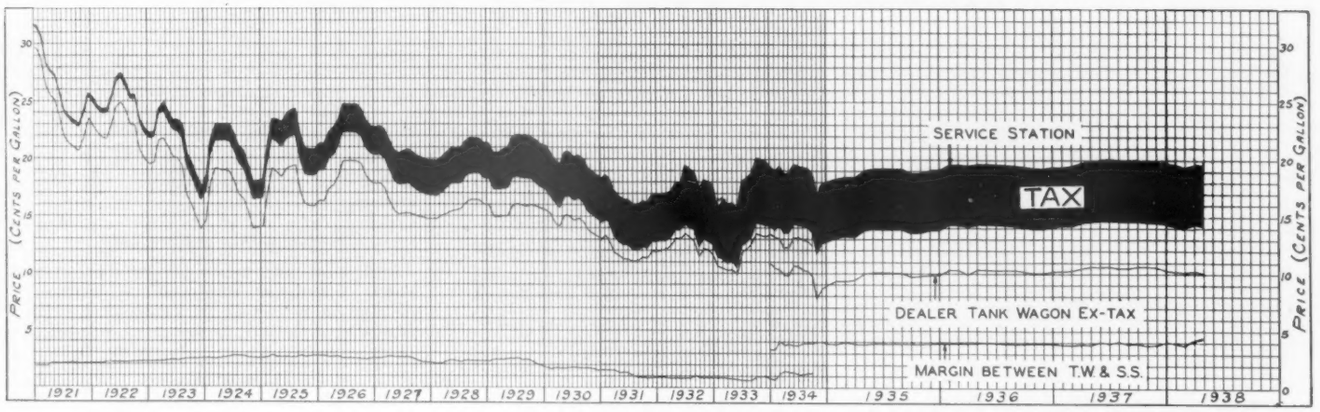
*Includes city tax of 0.5c.

S. O. CALIFORNIA
Stanavo Aviation Gasoline

	T.W.	
Phoenix, Ariz.	17.5	6
Los Angeles, Cal.	15	4
San Francisco, Cal.	15.5	4
Reno, Nev.	17.5	5
Portland, Ore.	16	6
Seattle, Wash.	16	6
Spokane, Wash.	18.5	6

Note: For discounts, etc., see note under Standard and Flight gasoline above.

Trend of Gasoline Prices and Gasoline Taxes, at 50 Representative Cities


PRICE (CENTS PER GALLON)
SERVICE STATION
TAX
DEALER TANK WAGON EX-TAX
MARGIN BETWEEN T.W.& S.S.
1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938

California

(*Continued from page* 56)

pliers were thinking in terms of lower values on burning oils in cargo lots. The nominal price on a good grade of gas oil appeared to be $1.35 per barrel and other products in this group were valued somewhat lower. A tentative inquiry by Far East buyers in quotations on two cargoes of aviation gasoline was renewed.

In domestic markets, indications pointed to lower quotations on some movement of independent gasolines. Although most traders were asking 7.75 cents, ex all tax, for rack deliveries of competitive grades, several plants offered gasoline at 7.25 cents to 7.5 cents. One sale of 12 tank cars was reported at 7 cents. Retail prices dropped to 11.9 to 12.5 cents at some stations handling these products.

Burning oils continued inactive in domestic markets. A lot of 10 cars of 14 gravity, high sulfur fuel oil was reported sold at 40 cents a barrel, although quotations for this product were generally upward of 60 cents. A good grade of diesel oil was available at 2.875 to 3 cents at independent plants and kerosine-distillate at 3.25 to 3.5 cents.

Wax

NEW YORK, April 18.—Export prices for fully refined wax at New Orleans and New York harbor markets were reduced by some suppliers in the week ended April 16. No changes, however, were reported on domestic prices for the fully refined grades.

Some bids for scale wax under 1.85 cents were in the market last week, but the majority of sellers said they were not interested in obtaining business at under the current general market level.

TANK WAGON MARKETS

Tank car, ank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in genera footnote. Gasoline taxes, shown in separate column, include 1c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes, where levied, are indicated in footnotes. Discounts to various classes of buyers also are shown in footnotes. These prices in effect April* 18, 1938, *as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

Naphtha (In Tank Wagon)

S. O. NEW JERSEY

Posted Tank Wagon Prices

	Mineral Spirits	V.M.&P.
Newark, N. J.	11.5	15.5
Baltimore, Md.	15.5	....
Washington, D. C.	15	....

Discounts: Buyers taking following quantities, at one time, get these discounts: Newark, 2c per gal. on 200 gals. or more; less than 200 gals., 0.5c higher price. Baltimore 2c off on 25 to 100 gals. and 3c on over 100 gals. Washington, 2c off to contract buyers.

SOCONY-VACUUM OIL CO.

Buffalo, N. Y.	13	14
New York City	9.5	11.5
Rochester, N. Y.	13	15
Syracuse, N. Y.	14	15
Boston, Mass.	13.5	14
Bridgeport, Conn.	12.5	14
Hartford, Conn.	12	13.5
Providence, R. I.	13.5	14.5

ATLANTIC REFINING CO.

Philadelphia, Pa.	11.5	12.5
Lancaster, Pa.	13	14
Pittsburgh, Pa.	12.5	14.5

Note: **Prices for Mineral Spirits also apply to Stoddard Solvent; and prices for V.M.&P. Naphtha apply also to Light Cleaners Naphtha.**

S. O. OHIO

	S.R. Solvent	V.M.&P. Naphtha
Thru Ohio	12.5	13.5

Note: **V.M.&P. Naphtha prices also apply on Dry Cleaners naphtha and special Varnolene; Varnolene and Sohio Solvent 0.5c below these prices. Discounts to contract consumers, off t.w. price: 300 to 999 gals., 0.5c; 1,000 to 2,499 gals., 0.75c; 2,500 to 4,999 gals., 1c; 5,000 or more gals., 1.5c.**

S. O. INDIANA

(Prices include state and federal taxes)

	Oleum Spirits	V.M.&P. Naphtha	Stanisol
Chicago, Ill.	16.2	16.5	15.9
Detroit, Mich.	19.7	18.7	19.8
Kansas City, Mo.	14.7	15.7	14.7
St. Louis, Mo.	15.0	16.0	15.9
Milwaukee, Wis.	19.6	20.6	19.6
Minneapolis, Minn.	19.8	20.8	17.7

Note: **Prices for V. M. & P. apply also to Light Cleaners Naphtha. All prices, with exception of Missouri points, include state tax. Prices shown are base prices, before discounts.**

Naphtha (In Tank Cars)

In Tank Cars (F. o. b. refinery or seaboard terminal except Ohio, delivered price.)

	V.M.&P. Naphtha	Solvent
Baltimore	10.5	9.5
New York Harbor	10	9
Philadelphia district	10.5	9
Boston	10.5	9.5
Providence	10.5	9.5
Ohio points, delivered	8.875	*8

***This is on rubber solvent.**

Note: **In Ohio, prices on D.C. naphtha and special Varnolene are same as V.M.&P.; on Varnolene and Sohio Solvent, prices are 0.5c less than on V.M.&P.**

Latest Changes

From April 12 to April 18 inclusive. Dates and amounts of changes shown. See table for full current prices.

S. O. Ohio—Motor Gasoline:
Q. D. A. in Union County reverts to state-wide level, April 14.

Kerosine:
Union and Wyandot counties, up 0.5c, April 14.

S. O. Indiana—Red Crown:
Consumer t. w. cut 1.7c, Grand Rapids, Apr. 12.

S. O. Louisiana—Kerosine:
Cut 1.5c, Little Rock, Apr. 15.

Continental Oil—Conoco Bronze and Demand:
Salt Lake City, dealer prices cut 1.5c, Apr. 12.

S. O. California—All gasolines:
Phoenix and Reno, up 0.5c, April 12.

Corrections

Notation of amount of change and dates not previously shown in table. Table in this issue is corrected to show these changes.

Socony-Vacuum Oil—Socony Mobilgas:
Socony-Vacuum has announced the following: In the March 30 general 0.5c advance thru New England as reported on page 52 of April 13 issue; Portland, consumer t. c. up 0.5c instead of 0.3c; split dealer t. w. up 0.5c instead of 0.6c; Boston and Providence, consumer t. c. up 0.5c instead 0.25c; Manchester, consumer t. c. up 0.6c instead of unchanged.
Thru typographical error Plattsburg consumer t. c. was reported as 7.5c in April 6 and 13 issues instead of 7.9c.

S. O. Kentucky—Crown:
Paducah, up 2c, Mar. 23.
Miami, cut 0.5c, Mar. 25.
Montgomery, consumer t. w. cut 1c, Mar. 30.

Kyso:
Paducah, up 2.5c, Mar. 23.

S. O. Indiana—Stanolind:
Dealer price cut 0.4c, South Bend, Apr. 9.

SEABOARD MARKETS, EXPORT AND COASTWISE

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days). In cargo markets, spot shipment is 90 days. Prices in cents per gallon, except heavy fuel oil in dollars per barrel, in tank car lots, f.o.b. refineries or seaboard terminals in districts designated, unless otherwise noted. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude. Unless otherwise noted, gasoline octane ratings are determined by C.F.R. Motor method, A.S.T.M.D-357-33T; and lubricating oil specifications determined according to A.S.T.M. methods, unless otherwise noted.

Eastern Domestic

(Inter-refinery and export prices not included.)

MOTOR GASOLINE

Prices Effective	April 18	
District:	(a)60-64 Oct.	(a)65 Oct. & Above
N. Y. harbor	6.25 – 6.50	6.50 – 6.75
(b)N.Y.harbor	6.00 – 6.25	6.00 – 6.50
Philadelphia	6.50 – 6.75	6.50 – 6.75
Baltimore	6.50 – 6.75	6.50 – 7.00
Norfolk	7.00 – 7.25	7.25 – 7.50
Wilmington, N. C.	7.00 – 7.25	7.25 – 7.50
Charleston, S. C.	7.00 – 7.25	7.25 – 7.50
Savannah	7.00 – 7.25	7.25 – 7.50
Jacksonville	7.00 – 7.25	7.25 – 7.50
Portland	7.00 – 7.50	7.25 – 7.75
Boston	6.25 – 7.25	6.50 – 7.50
Providence	6.50 – 7.25	6.75 – 7.50

(a) Prices are nominal. (b) Barge lots.

WATER WHITE KEROSINE

District:			
N. Y. harbor	5.50 –5.75	Charleston	6.00
(b)N. Y. harbor	5.00 – 5.50	Savannah	5.75
Philadelphia	5.75 –6.00	Jacksonville	5.75
Baltimore	6.00	Portland	6.225– 6.50
Norfolk	6.00	Boston	5.50 – 6.00
Wilmington, N.C.	6.00	Providence	5.50 – 6.00

(b) Barge ots.

(c)FUEL OILS

	N. Y. harb.	N. Y. harb. barges
No. 1	5.50 – 5.75	5.00 – 5.50
Nos. 2-3	4.50 – 4.75	4.125– 4.375
No. 4	4.50 – 4.75	4.125– 4.375
No. 5	$1.25	
No. 6	$1.05	
	Phila. dist.	**Balt. dist.**
No. 1	5.75 – 6.00	6.00
Nos. 2-3	4.75 – 5.00	4.75 – 5.00
No. 4	4.50 – 4.75	4.75 – 5.00
No. 5	$1.25	$1.25
No. 6	$1.05	$1.05
	Bost. dist.	**Prov. dist.**
No. 1	5.50 – 6.00	5.50 – 6.00
Nos. 2-3	4.50 – 5.00	4.75 – 5.00
No. 4	4.50 – 5.00	4.75 – 5.00
No. 5	$1.25	(a)$1.25
No. 6	$1.05	(a)$1.05

(a) Correction: This price correct for April 11 also.

(c) Fuel oils meet specifications of U. S. Commercial Standards CS12-35.

District:	(b)Bunker C Fuel	(b)Diesel Oil
N. Y. harbor	(e)$1.05	(d)$1.85
Philadelphia	(e)$1.05	(d)$1.85
Baltimore	(e)$1.05	(d)$1.95
Norfolk	(c)$1.05	$2.10
Charleston	$1.00	$2.10
Savannah	(c)$1.00	$2.205
Jacksonville	(c)$1.00	$2.205
Tampa	(c)$0.95	$2.205
Portland	$1.15	$2.25
Boston	(e)$1.05	(d)$1.95
Providence	$1.05	$1.95

(b) In ship's bunkers.
(c) For barging add 5c per bbl.
(d) For barging add 6.5c to 7.5c per bbl.
(e) For barging add 5c to 6c per bbl.

	Gas Oil 28-34 Gravity	Diesel Oil Shore Plants
N. Y. harbor	4.50 – 4.75	4.50 – 4.75
Philadelphia dist.	4.75 – 5.00	....
Baltimore dist.	5.00	....
Norfolk dist.	5.00	....
Savannah dist.	....	5.00
Jacksonville dist.	....	5.00

Pacific Export

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gal., except where otherwise noted.)

Prices Effective	April 18	April 11
U. S. Motor, under 65 oct.	5.25 – 5.375	5.25 – 5.375
400 e.p. blend, under 65 oct.	5.375– 5.50	5.375– 5.50
400 e.p. blend 65 oct. & above	5.50 – 5.625	5.50 – 5.625
(b)38-40 w.w.kerosine	4.50 – 5.00	4.50 – 5.00
41-43 w.w kerosine	5.00 – 5.50	5.00 – 5.50
44 w.w. kerosine	5.50	5.50
In Cargo lots, per bbl.		
Diesel fuel, 24° & above	$1.30 –$1.35	$1.45 –$1.50
Diesel fuel, under 24°	$1.25 –$1.30	$1.40 –$1.45
(b)30-34 diesel(gas oil)	$1.35 –$1.45	$1.45 –$1.65
(c)Grade C fuel oil	$0.75 –$0.80	$0.80 –$0.90

Note: For San Francisco cargo prices, add 5c per bbl. to above cargo prices.

(b)150 fire point.

In Ships' Bunkers, or deep tank lots, per bbl.:

(b)Diesel fuel oil	$1.625–$1.65	$1.625–$1.65
(c)Grade C fuel oil	$0.90 –$1.00	$0.90 –$1.00

(b) Pacific specification 200. (c) Pacific specification 400.

Prices Effective	April 18	April 11
Cased Goods: (Per case		
U. S. Motor	$1.40 –$1.525	$1.45 –$1.575
400 e.p. blend, under 65 octane	$1.50 –$1.60	$1.55 –$1.65
400 e.p. blend, 65 oct. & above	$1.60 –$1.70	$1.65 –$1.75
(b)40-43 w.w. kerosine	$1.30 –$1.40	$1.35 –$1.45
Kerosine, p.w.	$1.25 –$1.35	$1.30 –$1.40

(b)150 fire point.

New York Export

(Prices in cents per gal. in bbls. f.a.s. New York)

CYLINDER OILS (Pennsylvania Products)

Bright stock:		
Light, 25 p.t.	21.50	22.00
Dark, 25 p.t.	21.50	21.50
Neutral oil:		
200 3 color, 25 p.t.	23.50	23.50
150 3 color, 25 p.t.	21.50	21.50
600 Warren E filtered.	(a)	20.50
600 s.r., unfiltered	15.50 –16.00	16.00
650 s.r., unfiltered	17.50	18.00
600 fl., s.r.	17.50	17.50
630 fl., s.r.	21.00 –21.50	21.50

(a) No prices reported.

Wax, Domestic *and* Export

(Prices in cents per lb. Tests made by A. S. T. M. methods. Melting points shown below, however, are A. M. P., 3° higher than A. S. T. M. (E.M.P.) melting points. Export prices are f.a.s. carload lots. Domestic prices are f.o.b. refineries in New York and New Orleans districts, in bags, carload lots, with 0.2c discount allowed for shipment in bulk. Scale, solid and fully refined, slabs in bags.)

Prices Effective	April 18	
	New York	
	Domestic	**Export**
124-6 Y.C. scale	1.85 – 2.00	1.85 – 2.00
122-4 W.C. scale	1.85 – 2.00	1.85 – 2.00
124-6 W.C. scale	1.85 – 2.00	1.85 – 2.00
123-5 Fully rfd.	4.30	3.50
125-7 Fully rfd.	4.35	3.50 – 3.625
128-30 Fully rfd.	4.45	3.75 – 3.875
130-2 Fully rfd.	4.55	4.125
133-5 Fully rfd.	(a)5.00	4.50 – 4.625
135-7 Fully rfd.	(a)5.25	5.00 – 5.125
	New Orleans	
	Domestic	**Export**
124-6 Y.C. scale	1.85 – 2.00	1.85 – 2.00
122-4 W.C. scale	1.85 – 2.00	1.85 – 2.00
124-6 W.C. scale	1.85 – 2.00	1.85 – 2.00
123-5 Fully rfd.	4.30	3.50
125-7 Fully rfd.	4.35	3.50 – 3.625
128-30 Fully rfd.	4.45	3.75 – 3.875
130-2 Fully rfd.	4.55	4.125
133-5 Fully rfd.	(a)5.00	4.50 – 4.625

(b) Shipment either in bags or in bulk.

Gulf Coast

(Prices are f.o.b. ship at Gulf oil terminals representing opinions of majority of traders, except prices specified to the contrary. Prices cover bulk shipments of 20,000 bbls. or more, unless otherwise noted.)

Prices Effective	April 18	April 11
For Domestic shipment:		
MOTOR GASOLINE		
59 oct. & below	5.00 – 5.125	5.00 – 5.125
60-64 oct. number	5.125– 5.25	5.125– 5.25
65-67 octane	5.25 – 5.375	5.25 – 5.375
68-70 octane	5.375– 5.625	5.375– 5.625
FUEL OILS		
No. 1	4.50 – 4.625	4.50 – 4.625
No. 2	3.50	3.625
KEROSINE		
41-43 w.w.	4.50 – 4.625	4.50 – 4.625
For Export Shipment:		
GASOLINE		
U. S. Motor	4.75 – 4.875	4.75 – 4.875
60-62, 400 e.p.	4.75 – 4.875	4.75 – 4.875
61-63, 390 e.p.	4.875– 5.00	4.875– 5.00
64-66, 375 e.p.	4.875– 5.00	4.875– 5.00
KEROSINE		
44 w.w.	4.625– 4.875	4.625–4.875
41-43 w.w.	4.50 – 4.625	4.50 – 4.625
41-43 p.w.	4.50 – 4.625	4.50 – 4.625

GAS AND BUNKER OILS

For Export Shipment		
Gas Oil (a) and (b):		
Below 43 diesel index	3.50	3.625
43-47 diesel index	3.50	3.625
48-52 diesel index	3.625– 3.75	3.75
53-57 diesel index	3.875	3.875–4.00
58 & above diesel index	(c)	(c)

(a) Recognizing the change which has taken place generally in trade practice in the market for export gas oil at the American Gulf within the past year, National Petroleum News, beginning with this issue, is quoting this product on a simple diesel index basis.

(b) Less than ½ of 1% sulfur. (c) No prices reported.

Prices Effective	April 18	April 11
For Domestic and/or Export Shipment		
Diesel Oil Ship's bkrs.	(a)$1.75	(a)$1.75
Grade C bunker oil for ship's bunkers	(a)$0.80	(a)$0.80
Grade C bunker oil, in cargoes	$0.75	$0.75

(a) Barging 5c bbl. additional at some Gulf ports.

(b) MEXICAN CRUDE AND BUNKER OILS

(b) No prices available.

MID-CONTINENT LUBRICATING OILS

(Prices in cents per gal. for export shipment, f.o.b. Gulf in bulk, f.a.s. Gulf in bbls.)

	April 18	
190-200 vis. D 210 brt stock	(b)Barrels	Bulk
	23.50 –24.50	18.00 –20.50
150-160 vis. D 210 brt. stock:		
0-10 p.p.	19.50 –20.50	14.50 –15.00
10-25 p.p.	19.00 –20.00	14.00 –14.50
150-160 vis. E 210 brt. stock	19.00 –20.00	14.00 –14.50
120 vis. D 210 brt. stock:	19.00 –20.00	14.00 –14.50

(b) Second hand barrels

	April 18	April 11
180 vis. No. 3 color neutral:	Bulk	Bulk
0-10 p.p.	8.25	8.25
15-30 p.p.	8.00	8.00
200 vis. No. 3 color neutral:		
0-10 p.p.	8.75	8.75
15-30 p.p.	8.50	8.50
600 s.r. olive green	9.00 –11.25	9.00 –11.25
600 s.r. dark green	7.00 – 9.25	7.00 – 9.25

SOUTH TEXAS LUBRICATING OILS

(Vis. at 100° cold test 0, bulk export shipment, f.o.b. Gulf oil terminals.)

Unfiltered Pale Oils:

Vis. Color		
100 No. 3	4.75 – 5.25	5.25
200 No. 3	6.50 – 7.00	7.00
300 No. 3	7.00 – 7.50	7.50
500 No. 3½	8.00 – 8.50	8.50
750 No. 4	8.50 – 9.00	9.00
1200 No. 4	9.00 – 9.50	9.50
2000 No. 4	9.25 – 9.75	9.75

Red Oils:

Vis. Color		
100 No. 5-6	4.75 – 5.25	5.25
200 No. 5-6	6.50 – 7.00	7.00
300 No. 5-6	7.00 – 7.50	7.50
500 No. 5-6	8.00 – 8.50	8.50
750 No. 5-6	8.50 – 9.00	9.00
1200 No. 5-6	9.00 – 9.50	9.50
2000 No. 5-6	9.25 – 9.75	9.75

Note: Red oil prices shown above cover oils with green cast; prices for blue cast red oils are slightly lower in some cases.

Tanker Rates

(Approximate tanker freight rates to Continental ports, in shillings per ton of 2240 lbs., British sterling; to U. S. ports in cents per bbl.)

Rates Effective April 18

	Crude &/or Fuel		Refined Oil &/or Spirits	
	Last Paid	Owners Ask	Last Paid	Owners Ask
Gulf-U.K./Cont.	(b) 17/6	(d)18/-19/	(d)20/	18/-19/
Aruba-U.K./Cont.	(b) 16/	16/6-17/6	16/6	16/6-17/6
Gulf-N. Atlantic (c) (not E.of N.Y.): Hvy. Crude & fuel, (10 to 19.9 gravity)	16c-17c	17c	....	....
Light Crude, (30 Grav. or Lighter)	15c	15c	....	....
Gasoline	....	....	16c	16c-17c
Kerosine	....	....	17c	17c
Light Fuel	....	....	18c	18c

(a) Nominal.

(b) Continental ports in range between Bordeaux and Hamburg, both inclusive.

(c) Venezuela loading same rate: Tampico 2c to 3c per bbl. additional.

(d) Correction: These prices correct for April 11 also.

CRUDE OIL MARKETS

Prices in $ per bbl. of 42 U. S. gals. at the well. A. P. I gravity. Prices are effective as of 7 a. m. of dates as given

EASTERN FIELDS

Posted by Joseph Seep Purchasing Agency

(Effective March 7, 1938, except Corning Sept. 2, 1937)

Penna. Grade Oil in Southwest Penna. Pipe Lines.....$1.71
Penna. Grade Oil in Eureka Pipe Lines (West Virginia).....$1.65
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O.).....$1.55
Corning Oil in Buckeye Pipe Lines (Ohio)...$1.27

Posted by Other Companies

Tide Water Associated Oil Co.
Bradford-Allegany district (Penna. and N. Y.) (Effective March 7, 1938).....$2.05
*The Pennzoil Co.: (Effective March 7, 1938)
Penna. Grade Oil in National Transit Lines*$1.98
Ashland Oil & Transportation Co.:
Somerset Oil in Ashland Lines (Ky.):
(Effective Jan. 28, 1937)
Big Sandy River.....$1.42
Kentucky River.....$1.50

*The Pennzoil Co. posts $1.98 in Cochran, Franklin, Hamilton and Doolittle, Pa. fields; prices in other lower districts range down to $1.93 per bbl. at well.

MICHIGAN

Posted by Pure Oil Co.

Midland, Midland County (Jan. 5, 1938)....$1.12

Posted by Simrall Pipe Line Corp.

(Effective Dec. 29, 1937)

West Branch, Arenac, and equal grades.....$0.80

(Effective Jan. 8, 1938)

Beaverton, Crystal, Greendale, Porter and equal grades.....$1.12
Buckeye, Bentley, Billings, Tobacco and equal grades.....$1.095

CENTRAL STATES FIELDS

Posted by Ohio Oil Co.

(Effective Jan. 28, 1937)

Illinois, Princeton.....$1.35
Owensboro (Western Ky.).....$1.40

(Effective Nov. 20, 1937)

Lima, O.....$1.00

Posted by Stoll Oil Refining Co.

(Effective Feb. 1, 1937)

Stoll Pipe Line Oil (Ky.).....$1.40

CANADIAN FIELDS

Posted by Imperial Oil Limited

Western Ontario

(Effective Sept. 9, 1933)

Petrolia.....$2.10
Oil Springs.....$2.17

Alberta—Turner Valley

(Prices f.o.b. field tankage)

(Effective Jan. 5, 1938)

Crude Oil

40-40.9°.....	$1.14	53-53.9.....	$1.40
41-41.9.....	1.16	54-54.9.....	1.42
42-42.9.....	1.18	55-55.9.....	1.44
43-43.9.....	1.20	56-56.9.....	1.46
44-44.9.....	1.22	57-57.9.....	1.48
45-45.9.....	1.24	58-58.9.....	1.50
46-46.9.....	1.26	59-59.9.....	1.52
47-47.9.....	1.28	60-60.9.....	1.54
48-48.9.....	1.30	61-61.9.....	1.56
49-49.9.....	1.32	62-62.9.....	1.58
50-50.9.....	1.34	63-63.9.....	1.60
51-51.9.....	1.36	64-64.9.....	1.62
52-52.9.....	1.38		

Crude Naphtha, 65 grav. & above.....$2.14

Absorption Gasoline

90% Rec., 20 lb. Reid v.p.....$1.94
90% Rec., 17 lb. Reid v.p.....$2.08

MID-CONTINENT

Posted by Stanolind Crude Oil Purchasing Co., Jan. 28, 1937

	(In Oklahoma-*Kansas)	(In North-North Central Texas)
Below 29.....	$1.06	$0.96
29-29.9.....	1.08	0.98
30-30.9.....	1.10	1.00
31-31.9.....	1.12	1.02
32-32.9.....	1.14	1.04
33-33.9.....	1.16	1.06
34-34.9.....	1.18	1.08
35-35.9.....	1.20	1.10
36-36.9.....	1.22	1.12
37-37.9.....	1.24	1.14
38-38.9.....	1.26	1.16
39-39.9.....	1.28	1.18
40 & above....	1.30	1.20

Above Stanolind prices met as follows:

Jan. 28, Continental Oil Co. met in Okla., Kans., and North Texas. Sinclair-Prairie met in North Texas and North Central Texas, Jan. 28, Stanolind's North Texas schedule. Same date, The Texas Co. met in North-North Central Texas.

Note: Stanolind prices in Okla.-Kans. are for quantities computed by 97% tank tables. In Texas, 100% tank tables are used effective Oct. 1, 1937, volume corrected to 60° F., and deduction for full b.s. & w. content.

*Effective Aug. 1, 1937, for Otis-Albert pools Rush-Barton counties, Kans., 13c less.

Posted by Carter Oil Co.

In Oklahoma

(Effective Jan. 28, 1937)

Below 25.....	$0.98	33-33.9.....	$1.16
25-25.9.....	1.00	34-34.9.....	1.18
26-26.9.....	1.02	35-35.9.....	1.20
27-27.9.....	1.04	36-36.9.....	1.22
28-28.9.....	1.06	37-37.9.....	1.24
29-29.9.....	1.08	38-38.9.....	1.26
30-30.9.....	1.10	39-39.9.....	1.28
31-31.9.....	1.12	40 and above...	1.30
32-32.9.....	1.14		

Above Carter schedule met Jan. 28 by the following companies: Sinclair-Prairie, Shell and Bransdall in Oklahoma-Kansas; Skelly Oil in Kansas; Tide Water in Oklahoma; Pure Oil in Oklahoma-Kansas, beginning with below 24 at $0.98 and ending with 40 & above at $1.30.

Posted by Magnolia Petroleum Co.

(Effective Jan. 28, 1937)

In Oklahoma, same schedule as Carter Oil, which see above, beginning with below 25, at $0.98 and ending with 40 & above, at $1.30.

In Texas: North and North Central, including Burkburnett, Archer, Henrietta, Electra, Comanche and Olden, same gravity and price schedule as Stanolind in North Texas, which see under Stanolind, beginning with below 29 at $0.96 and ending with 40 and above, at $1.20.

Beaumont, Tex.

(Effective Oct. 1, 1937)

Below 21°.....	$0.95	27-27.9.....	$1.15
21-21.9.....	0.98	28-28.9.....	1.17
22-22.9.....	1.01	29-29.9.....	1.19
23-23.9.....	1.04	30-30.9.....	1.21
24-24.9.....	1.07	31-31.9.....	1.23
25-25.9.....	1.10	32-32.9.....	1.25
26-26.9.....	1.13	33-33.9.....	1.27
		34 & above.....	1.29

TEXAS FIELDS

Posted by Humble Oil & Refining Co.

(**West Central Texas*)

(Effective Jan. 28, 1937)

Below 29.....	$0.96	35-35.9.....	$1.10
29-29.9.....	0.98	36-36.9.....	1.12
30-30.9.....	1.00	37-37.9.....	1.14
31-31.9.....	1.02	38-38.9.....	1.16
32-32.9.....	1.04	39-39.9.....	1.18
33-33.9.....	1.06	40 and above...	1.20
34-34.9.....	1.08		

*Includes Brown, Callahan, Coleman, Comanche, Eastland, Fisher, Haskell, Jones, Shackelford, Stephens, Throckmorton and Young counties.

Shell Petroleum Corp., effective Jan. 28, posts Humble's above schedule on Fisher county crude, plus these five lower grades, beginning with below 25 gravity at $0.88; 25-25.9, $0.90; 26-26.9, $0.92; 27-27.9, $0.94, and 28-28.9, $0.96; rest of schedule same as Humble's in West Central Texas.

Note: Effective Oct. 1, 1937, Humble prices are based on 100% tank tables at 60F.

**East Central Texas*

(Effective Jan. 28, 1937)

Below 29.....	$1.03	35-35.9.....	$1.17
29-29.9.....	1.05	36-36.9.....	1.19
30-30.9.....	1.07	37-37.9.....	1.21
31-31.9.....	1.09	38-38.9.....	1.23
32-32.9.....	1.11	39-39.9.....	1.25
33-33.9.....	1.13	40 and above...	1.27
34-34.9.....	1.15		

*Including Anderson, Cherokee, Limestone, Navarro counties.

Same date, Sinclair-Prairie met in Mexia Humble's above schedule.

PANHANDLE TEXAS

Posted by Humble Oil & Refining Co.

(Effective Jan. 28, 1937)

	Gray County	Carson-Hutchinson
Below 35.....	$0.96	$0.91
35-35.9.....	0.98	0.93
36-36.9.....	1.00	0.95
37-37.9.....	1.02	0.97
38-38.9.....	1.04	0.99
39-39.9.....	1.06	1.01
40 & above.....	1.08	1.03

Jan. 28, above prices met by Sinclair-Prairie and Magnolia in the entire area and by Continental in Carson-Hutchinson and by Texas Co. in Panhandle Sweet, same as Humble's Gray Co. and on Panhandle Sour, same as Carson-Hutchinson.

EAST TEXAS

(Effective May 22, 1937)

Stanolind, Humble, Shell, Sinclair-Prairie, Texas Co., and Magnolia.....$1.35

Shell also posted on Jan. 28, in Livingston area, Polk County, Texas, $1.27.

NORTHEAST TEXAS

(Posted by Humble, Jan. 28, 1937)

Talco.....$0.73

(Posted by Magnolia, Jan. 28, 1937)

Cass County and Panola County, Tex.:

Same gravity and price schedule as S. O. Louisiana posts for Rodessa, La., which see under that company.

(Posted by The Texas Co., Jan. 28, 1937)

Cass County.....$1.25

WEST TEXAS AND NEW MEXICO

Posted by Humble Oil & Refining Co.

(Effective Jan. 28, 1937)

(Including Andrews, Crane, Crockett, Ector, Glasscock, Howard, Winkler and Upton Counties, Texas and Lea county, New Mexico).

Below 26.....	$0.78	33-33.9.....	$0.94
26-26.9.....	0.80	34-34.9.....	0.96
27-27.9.....	0.82	35-35.9.....	0.98
28-28.9.....	0.84	36-36.9.....	1.00
29-29.9.....	0.86	37-37.9.....	1.02
30-30.9.....	0.88	38-38.9.....	1.04
31-31.9.....	0.90	39-39.9.....	1.06
32-32.9.....	0.92	40 & above....	1.08
Pecos, West Texas.....			$0.91

Jan. 28, Magnolia met Humble in Crane, Upton, Howard, Glasscock, Mitchell and Winkler.

Shell Petroleum Corp., on Jan. 28, met Humble in Crane, Glasscock, Howard, Pecos (except Yates shallow pool), Winkler, and Upton counties, Tex., and in Lea County, N. Mex. On Jan. 28, Shell posted in Yates shallow pool in Pecos county, Tex., $0.81. June 4, 1937, Shell added Ector county to West Texas postings.

Jan. 28, Stanolind Oil & Gas Co. met Humble in Hendrick field, Winkler county.

Jan. 28, Texas Co. met Humble in Ward and Winkler counties, Tex., and Lea County, N. M. except that its top grade is 36 and above, at $1.00.

April 20, 1937, Sinclair Prairie met Humble in Ward and Winkler, Tex. and Lea, N. M., counties, except that its gravity schedule ends with 36 and above, at $1.00.

Posted by Continental Oil Co.

(Effective Jan. 28, 1937)

Artesia, Jackson and Maljamar pools, N. M...$0.90

COLORADO

(Posted by Continental Oil Co., Effective Jan. 28, 1937)

Ft. Collins and Wellington

Below 29.....	$1.01	35-35.9.....	$1.15
29-29.9.....	1.03	36-36.9.....	1.17
30-30.9.....	1.05	37-37.9.....	1.19
31-31.9.....	1.07	38-38.9.....	1.21
32-32.9.....	1.09	39-39.9.....	1.23
33-33.9.....	1.11	40 & above.....	1.25
34-34.9.....	1.13		

Cannon City and Florence, Col.....$1.10

SOUTH AND SOUTHWEST TEXAS

All Shown Below Posted by Humble Oil & Refining Co.

(Effective Jan. 28, 1937)

Carroll, Clark, Darst Creek, Hilbig, Salt Flat and Zoboroski fields.....$1.09
Pettus.....$1.37 Van Zandt.....$1.10

Jan. 28, Magnolia met Humble in Darst Creek; posted $1.00 in Luling; $1.12 in Lytton Springs; $1.27 for Cleveland, and $1.15 in Hardin, both in Liberty county, Tex.

Jan. 28, 1937, The Texas Co. met Humble in Darst Creek.

Anahuac, Dickinson, Flour Bluff and Turtlebay

(Effective Jan. 28, 1937)

Below 31.....	$1.16	36-36.9.....	$1.28
31-31.9.....	1.18	37-37.9.....	1.30
32-32.9.....	1.20	38-38.9.....	1.32
33-33.9.....	1.22	39-39.9.....	1.34
34-34.9.....	1.24	40 and above....	1.36
35-35.9.....	1.26		

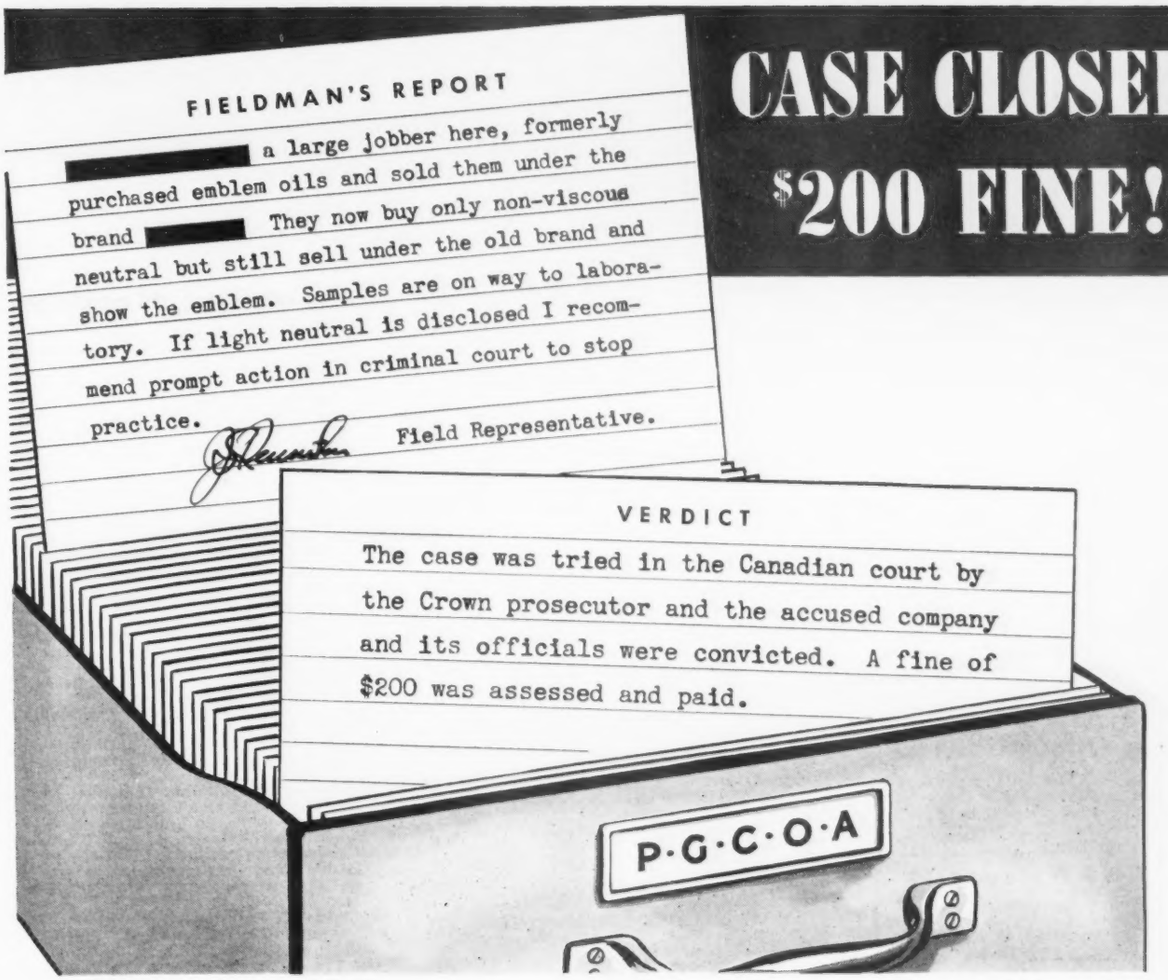
Conroe, Raccoon Bend (Deep sand crude) Tomball and Satsuma

(Effective Jan. 28, 1937)

Below 29.....	$1.20	35-35.9.....	$1.34
29-29.9.....	1.22	36-36.9.....	1.36
30-30.9.....	1.24	37-37.9.....	1.38
31-31.9.....	1.26	38-38.9.....	1.40
32-32.9.....	1.28	39-39.9.....	1.42
33-33.9.....	1.30	40 & above.....	1.44
34-34.9.....	1.32		

Jan. 28, Magnolia met Humble in Tomball and Texas Co. met Humble in Conroe, beginning with 35-35.9 gravity.

CASE CLOSED
$200 FINE!


FIELDMAN'S REPORT
[redacted] a large jobber here, formerly purchased emblem oils and sold them under the brand [redacted] They now buy only non-viscous neutral but still sell under the old brand and show the emblem. Samples are on way to laboratory. If light neutral is disclosed I recommend prompt action in criminal court to stop practice.
Field Representative.
VERDICT
The case was tried in the Canadian court by the Crown prosecutor and the accused company and its officials were convicted. A fine of $200 was assessed and paid.
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Coming Meetings

The Credit Men's Association of Eastern Pa., Petroleum Refiners & Marketers Credit Groups of Eastern and Western Pa., Penn-Harris Hotel, Harrisburg, Pa., April 25 and 26.

Western Petroleum Refiners Assn., 26th annual meeting, Hotel Arlington, Hot Springs, Ark., April 25, 26 and 27.

Society of Automotive Engineers, Inc., Sectional-Regional Transportation & Maintenance meeting, (Public Utility Fleet Operations), Hotel Statler, Cleveland, Ohio, April 28 and 29.

Fuel Oil Distributors Assn. of N. J., third-annual convention, Hotel Berkeley Carteret, Asbury Park, N. J., May 5 and 6.

American Gas Assn., Natural Gas Dept., annual convention, New Orleans, La., May 9 to 12.

Natural Gasoline Assn. of America, 17th annual convention, Hotel Tulsa, Tulsa, May 11 to 13.

National Oil Scouts Assn. of America, Tulsa, Okla., May 12, 13 and 14.

International Petroleum Exposition, Tulsa, Okla., May 14 and 21.

Virginia Oil Men's Assn., annual meeting, John Marshall Hotel, Richmond, Va., May 20.

American Petroleum Institute, mid-year meeting, Allis and Lassen Hotels, Wichita, Kans., May 23, 24 and 25.

7th Annual Petroleum and Natural Gas Conference, Penna. State College, Penna. Grade Crude Oil Assn., and Penna. Natural Gas Men's Assn., State College, Pa., May 27, 28.

Society of Automotive Engineers, summer meeting, The Greenbrier, White Sulphur Springs, W. Va., June 12 to 17.

Oil Trades Assn. of New York, sports day, Pelham Country Club, Pelham, N. Y., June 14.

American Society of Mechanical Engineers, national oil and gas power meeting, Dallas, Texas, June 15 to 18.

Pennsylvania Grade Crude Oil Assn., William Penn Hotel, Pittsburgh, Pa., June 16, 17 and 18.

American Society of Mechanical Engineers, St. Louis, Mo., June 20 to 24.

American Society for Testing Materials, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 27 to July 1.

West Virginia Oil and Natural Gas Assn., Charleston, W. Va., July 27, 28.

National Petroleum Assn., 36th annual meeting, Hotel Traymore, Atlantic City, Sept. 14, 15 and 16.

Oil Trades Assn. of New York, sports day, Pelham Country Club, Pelham, N. Y., Sept. 20.

National Association of Petroleum Retailers, annual meeting, St. Louis, Sept. 27, 28 and 29.

Texas Tax Collections Up

N. P. N. News Bureau

AUSTIN, Tex., April 18.—An increase of 40.34 per cent in revenue from gross production levy on crude oil was registered for the first six months of the fiscal year as compared with the same period a year ago, Comptroller George H. Sheppard of Texas has reported. The increase was due to gains in production, price and rate of taxation.

Receipts for the six-months period totaled $8,474,193, a gain of $2,435,781 over the $6,038,412 received last year.

Crude production amounted to 244,834,888 barrels, a gain of 11.32 per cent over the 219,926,916 barrels on which taxes were paid in the same period last year.